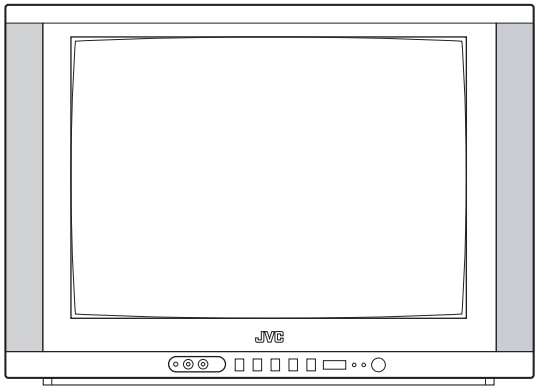
JVC

SERVICE MANUAL

COLOUR TELEVISION

AV-21D116/B

BASIC CHASSIS
CG4



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SPECIFICATION

Items		Contents
Dimensions (W × H × D)		59.8 cm × 46.8 cm × 47.8 cm
Mass		21 kg
TV RF System		B/G, I, D/K
Colour System		PAL SECAM NTSC 3.58 / NTSC 4.43
Receiving Frequency	VHF Low VHF High UHF CATV	46.25 MHz to 168.25 MHz 175.25 MHz to 463.25 MHz 471.25 MHz to 863.25 MHz Mid (X to Z+2, S1 to S10) / Super (S11 to S20) / Hyper (S21 to S41) bands
Intermediate Frequency	VIF	38.0 MHz (B/G, I, D/K)
	SIF	32.5 MHz (5.5 MHz: B/G) 32MHz (6.0 MHz: I) 31.5MHz (6.5 MHz: D/K)
Colour Sub Carrier	PAL SECAM NTSC	4.43 MHz 4.40625 MHz / 4.25 MHz 3.58 MHz / 4.43 MHz
Power Input		AC220 V to AC240 V, 50 Hz / 60 Hz
Power Consumption		90 W (Max) / 60 W(Avg)
Picture Tube		Visible size: 52.8 cm measured diagonally (H : 42.0 cm × V : 32.0 cm)
High Voltage		26.5 kV±1.5kV (at zero beam current)
Speaker		5 cm × 12 cm, Oval type × 2
Audio Power Output		3 W (monaural)
Aerial Input Terminal		75 Ω unbalanced, coaxial
Input Terminal [Front / Rear]	Video Audio	1 V(p-p), 75 Ω, RCA pin jack × 2 500 mV(rms) (-4 dBs), High impedance, RCA pin jack × 2
Output Terminal [Rear]	Video Audio	1 V(p-p), 75Ω, RCA pin jack × 1 500 mV(rms) (-4 dBs), Low impedance, RCA pin jack × 1
Headphone Jack		3.5 mm mini jack × 1
Remote Control Unit		RM-C1121 (Battery size : AA / R6 / UM-3 × 2)

Design and specifications are subject to change without notice.

SECTION 1
PRECAUTION

1.1 SAFETY PRECAUTIONS

(1) The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

(2) Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

(3) Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual**. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.

(4) **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED (NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND.
Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time with a measuring apparatus (oscilloscope etc.). If above note will not be kept, a fuse or any parts will be broken.

(5) If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).

(6) The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.

(7) Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.

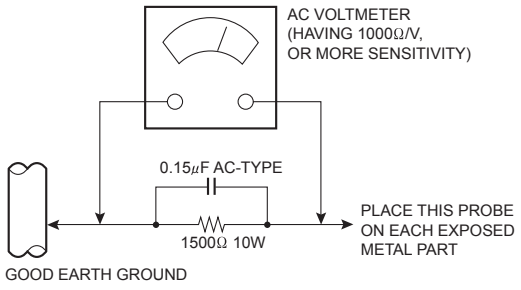
(8) When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

(9) **Isolation Check (Safety for Electrical Shock Hazard)**
After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

a) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second. (. . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

b) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

Alternate Check Method
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000Ω per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



SECTION 2
SPECIFIC SERVICE INSTRUCTIONS

2.1 FEATURES

PICTURE MODE

This function can adjust the picture settings automatically. There are BRIGHT, STANDARD and SOFT in the PICTURE MODE.

RETURN +

This function can set a channel you frequently view to the Return Channel and you can view that channel at any time with one-touch.

CHILD LOCK

Use this function to prevent children from operating the TV without parental consent.

VNR

This function can reduce the picture noise.

2.2 TECHNINAL INFORMATION

2.2.1 MAIN MI-COM (CPU) PIN FUNCTION

Pin No.	Pin name	I/O	Function	Pin No.	Pin name	I/O	Function
1	REMOCON	I	Remote control	22	PROTECT	I	Low B protect detection [Detect: H]
2	SDA2	I/O	Data for Inter IC control (For main memory)	23	P_ON/OFF	I	Main power control [ON : H]
3	SCL2	O	Clock for Inter IC contorl (For main memory)	24	LOCK	-	Not used
4	BUS_FREE	-	Not used	25	3.58/OTH	-	Not used
5	NC	-	Not used	26	4.5/OTH	-	Not used
6	KEY1	I	Key scan for front key (Menu CH -/+)	27	H_SYNC	I	Horizontal sync
7	KEY2	I	Key scan for front key (Vol -/+)	28	I/II	-	Not used
8	ECO IN	-	Not used	29	OSD_Ys	O	Ys (blanking) for OSD
9	AFT	I	AFT voltage for tuner	30	OSD_B	O	Blue for OSD
10	LED[POW]	-	Not used	31	OSD_G	O	Green for OSD
11	LED[TIM]	O	Liting for timer [Liting : H]	32	OSD_R	O	Red for OSD
12	GND	-	GND	33	NC	-	Not used
13	NC	-	Not used	34	RST	I	CPU reset [Reset:L]
14	NC	-	Not used	35	V_SYNC	I	Vertical sync
15	TV/V	-	Not used	36	TCLOCK	-	Not used
16	TEXT RESET	-	Not used	37	SDA1	I/O	Data for Inter IC control (For generally)
17	ACL ON/OFF	-	Not used	38	SCL1	O	Clock for Inter IC contorl (For generally)
18	VOL	O	Volume control	39	VDD	I	3.3V
19	A_MUTE	O	Aodio muting [Muting : H]	40	OSC1	I	System clock oscillation (4MHz)
20	NC	-	Not used	41	OSC2	O	System clock oscillation (4MHz)
21	TEXT/OTH	-	Not used	42	VSS	-	GND

SECTION 3
DISASSEMBLY

3.1 DISASSEMBLY PROCEDURE

3.1.1 REMOVING THE REAR COVER

- Unplug the power cord.
  (1) Remove the 7 screws **[A]** and 1 screw **[B]** as shown in Fig.1.
  (2) Withdraw the REAR COVER toward you.

CAUTION:

When reinstalling the rear cover, carefully push it inward after inserting the MAIN PWB into the REAR COVER groove.

3.1.2 REMOVING THE MAIN PW BOARD

- Remove the REAR COVER.
  (1) Slightly raise the both sides of the MAIN PWB by hand.
  (2) Withdraw the MAIN PWB backward.
  (If necessary, take off the wire clamp and connectors, etc.)

3.1.3 REMOVING THE SPEAKER

- Remove the REAR COVER.
  (1) Remove the 4 screws **[C]** as shown in Fig.1.
  (2) Follow the same steps when removing the other hand SPEAKER.

3.1.4 CHECKING THE MAIN PW BOARD

- To check the back side of the MAIN PWB.
  (1) Pull out the MAIN PWB. (Refer to REMOVING THE MAIN PW BOARD).
  (2) Erect the MAIN PWB vertically so that you can easily check its back side.

CAUTIONS:

- Before turning on power, make sure that the CRT earth wire and other connectors are properly connected.
- When repairing, connect the DEG. COIL to the DEG. connector on the MAIN PWB.

3.1.5 WIRE CLAMPING AND CABLE TYING

(1) Be sure to clamp the wire.
(2) Never remove the cable tie used for tying the wires together.
Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

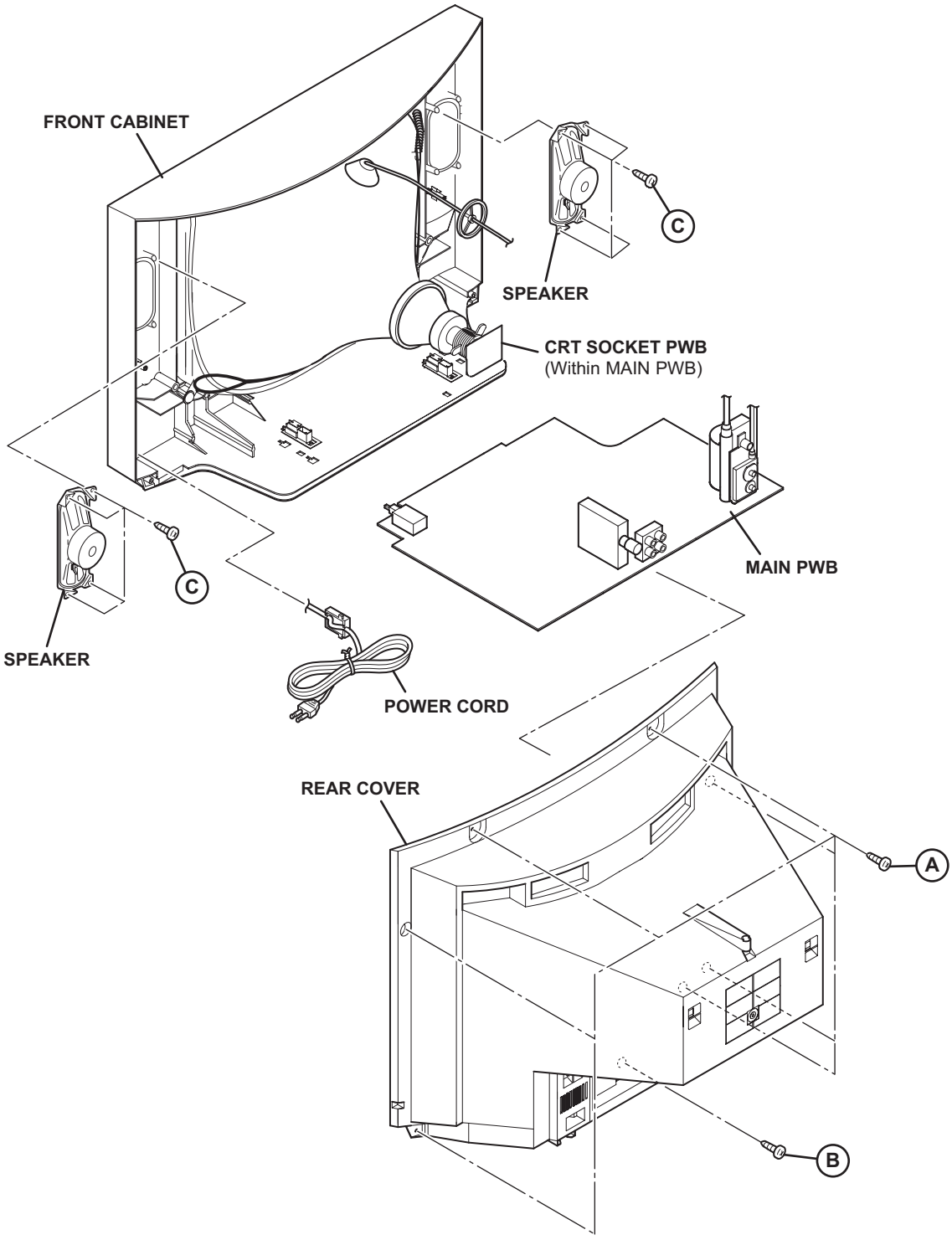

FRONT CABINET
C
SPEAKER
CRT SOCKET PWB
(Within MAIN PWB)
MAIN PWB
C
SPEAKER
POWER CORD
REAR COVER
A
B

Fig.1

3.2 MEMORY IC REPLACEMENT

- This model uses the memory IC.
- This memory IC stores data for proper operation of the video and drive circuits.
- When replacing, be sure to use an IC containing this (initial value) data.

3.2.1 MEMORY IC REPLACEMENT PROCEDURE

1. Power off
Switch off the power and disconnect the power plug from the AC outlet.

2. Replace the memory IC
Be sure to use the memory IC written with the initial setting values.

3. Power on
Connect the power plug to the AC outlet and switch on the power.

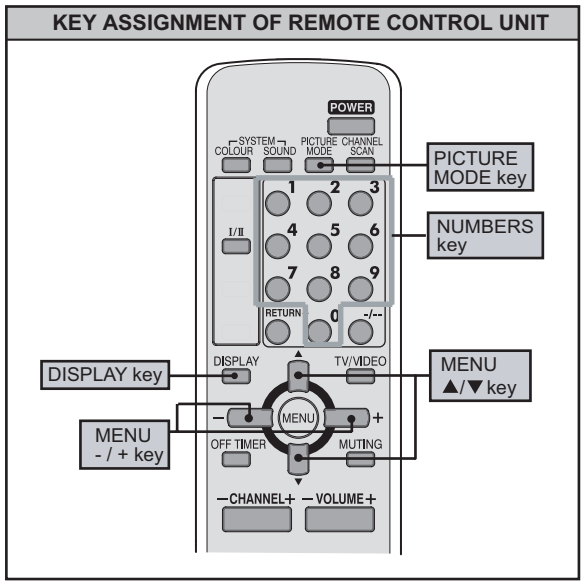
4. System constant check and setting

- It must not adjust without adjustment signals.
  (1) Press the **[DISPLAY]** key and the **[PICTURE MODE]** key of the REMOTE CONTROL UNIT simultaneously.
  (2) The SERVICE MENU screen of Fig. 1 will be displayed.
  (3) While the SERVICE MENU is displayed, again press the **[DISPLAY]** key and **[PICTURE MODE]** key simultaneously, and the SYSTEM CONSTANT SET screen of Fig. 2 will be displayed.
  (4) Check the setting values of the SYSTEM CONSTANT SETTING. If the value is different, select the setting item with the **[MENU ▲/▼]** key, and set the correct value with the **[MENU - / +]** key.
  (5) Press the **[DISPLAY]** key twice, and return to the normal screen.

5. Receiving channel setting
Refer to the OPERATING INSTRUCTIONS and set the receive channels (Channels Preset) as described.

6. User settings
Check the user setting items according to the given in page later.
Where these do not agree, refer to the OPERATING INSTRUCTIONS and set the items as described.

7. SERVICE MENU setting
Verify what to set in the SERVICE MENU, and set whatever is necessary (Fig.1).
Refer to the SERVICE ADJUSTMENT for setting.



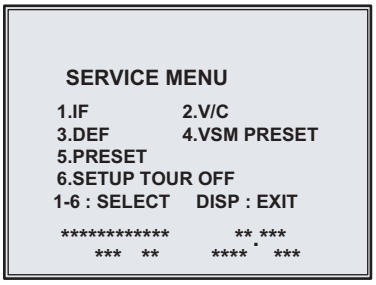


Fig.1

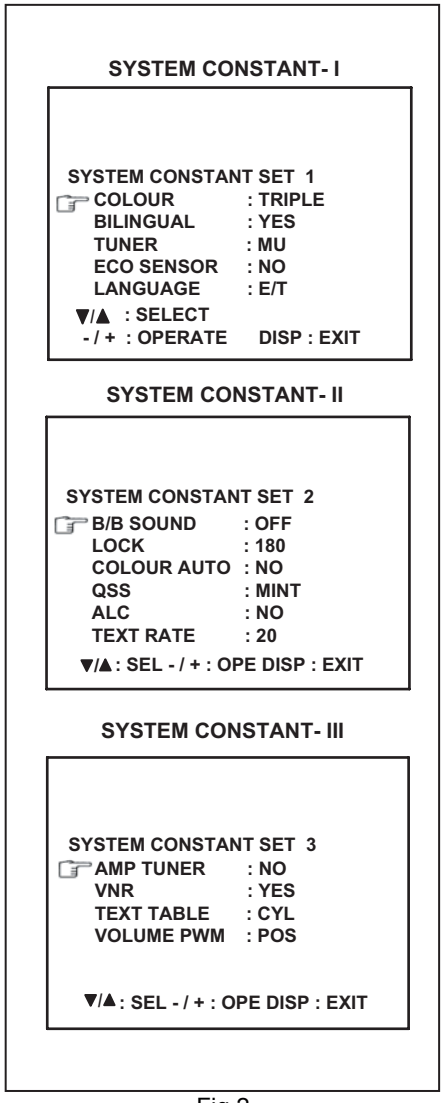

SYSTEM CONSTANT- I
SYSTEM CONSTANT SET 1
COLOUR : TRIPLE
BILINGUAL : YES
TUNER : MU
ECO SENSOR : NO
LANGUAGE : E/T
▼/▲ : SELECT
- / + : OPERATE
DISP : EXIT
SYSTEM CONSTANT- II
SYSTEM CONSTANT SET 2
B/B SOUND : OFF
LOCK : 180
COLOUR AUTO : NO
QSS : MINT
ALC : NO
TEXT RATE : 20
▼/▲: SEL - / + : OPE DISP : EXIT
SYSTEM CONSTANT- III
SYSTEM CONSTANT SET 3
AMP TUNER : NO
VNR : YES
TEXT TABLE : CYL
VOLUME PWM : POS
▼/▲: SEL - / + : OPE DISP : EXIT

Fig.2

3.2.2 SETTINGS OF FACTORY SHIPMENT

3.2.2.1 BUTTON OPERATION

Setting item	Setting position
POWER	Off
CHANNEL	PR1
VOLUME	10

3.2.2.2 REMOTE CONTROL DIRECT OPERATION

Setting item	Setting position
CHANNEL	PR1
VOLUME	10
TV/VIDEO	TV
PICTURE MODE	BRIGHT
COLOUR SYSTEM	PAL
SOUND SYSTEM	B/G

3.2.2.3 REMOTE CONTROL MENU OPERATION

(1) MENU-1

Setting item	Setting position
INPUT	TV
ON TIMER	PR1 0:00
VNR	OFF

(2) MENU-2

Setting item	Setting position
AUTO SHUTOFF	OFF
CHILD LOCK	OFF
BLUE BACK	OFF

(3) MENU-3

Setting item	Setting position
SETUP TOUR	ON
LANGUAGE	THAI

(4) MENU-4

Setting item	Setting position		
	BRIGHT	STANDARD	SOFT
TINT	15	15	15
COLOUR	15	15	15
BRIGHT	15	15	15
CONT.	30	18	14
SHARP	20	15	12

3.2.3 SYSTEM CONSTANT SETTING

Setting item	Setting value
COLOUR	TRIPLE
BILINGUAL	YES
TUNER	MU
ECO SENSOR	NO
LANGUAGE	E / T
B/B SOUND	OFF
LOCK	180
COLOUR AUTO	NO
QSS	MINT
ALC	NO
TEXT RATE	20
AMP TUNER	NO
VNR	YES
TEXT TABLE	CYL
VOLUM PWM	POS

3.2.4 SERVICE MENU SETTING ITEMS

Setting item	Setting value	Setting item	Setting value	
2. V/C	1.CUT OFF 2.DRIVE 3.BRIGHT 4.CONT. 5.COLOUR 6.TINT 7.SECAM BL ADJUST 8.SHARP **[Do not adjust]** 9.AMP T. SHARP **[Do not adjust]**	5. PRESET **[Do not adjust]**	Colour System	1. C-TRAP FIX 2. SHARP PEAK 3. ABL 4. GAMMA 5. Y. DELAY TIME 6. BLACK EXP START 7. C-BPF 8. CW / SCP 9. VIF DET LEVEL 11. IF AGC MIN 12. VIF AGC 13. VIF PMOD 19. VNR 20. RGB LIM 21. RGB LIMIT LEVEL 23. TEXT H. POSITION 24. READ DATA
3. DEFLECTION	1. VER. POSITION 2. HOR. POSITION 3. VER. HEIGHT 4. VER. LINEARITY 5. VER. SCURVE 6. HOR. VCO ADJUST **[Do not adjust]**			
4.VSM PRESET	TINT COLOUR BRIGHT CONT. SHARP		Sound System	10. SIF DET LEVEL 14. SIF BPF BW ADJUST 15. SIF TRAP F0 ADJUST 16. SIF TRAP F0 ADJUST 2 17. SIF -TRAP 18. SIF -BPF 22. SIF SW

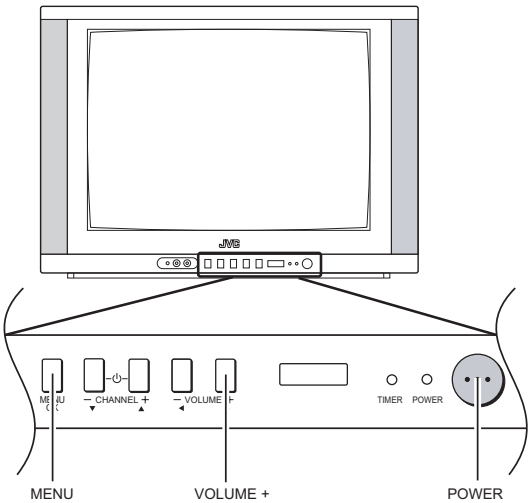
3.2.5 REPLACEMENT OF IC301 (IF V/C DECODER)

- **For the IC301(IF V/C DECODER) of this model, all data are written in the micro-computer. So, write the data in the micro-computer in accordance with the following procedures before starting adjustment.**

■ PROCEDURES

(1) Turn the POWER OFF.
(2) Replace the IC301 with a new one.
(3) While pressing **[MENU]** button and **[VOL+]** button ON the FRONT CABINET simultaneously, turn the POWER ON. When the POWER is turned ON, the data is written in the micro-computer immediately.

■ LOCATIONS OF FRONT PANEL BUTTONS



3.3 REPLACEMENT OF CHIP COMPONENT

3.3.1 CAUTIONS

(1) Avoid heating for more than 3 seconds.
(2) Do not rub the electrodes and the resist parts of the pattern.
(3) When removing a chip part, melt the solder adequately.
(4) Do not reuse a chip part after removing it.

3.3.2 SOLDERING IRON

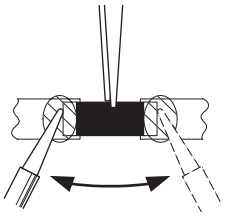
(1) Use a high insulation soldering iron with a thin pointed end of it.
(2) A 30w soldering iron is recommended for easily removing parts.

3.3.3 REPLACEMENT STEPS

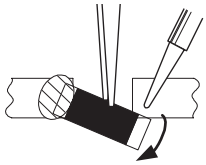
1. How to remove Chip parts

[Resistors, capacitors, etc.]

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.



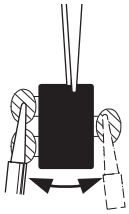
(2) Shift with the tweezers and remove the chip part.



[Transistors, diodes, variable resistors, etc.]

(1) Apply extra solder to each lead.

(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.



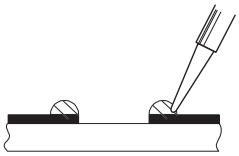
NOTE :

After removing the part, remove remaining solder from the pattern.

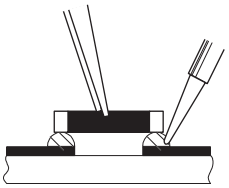
2. How to install Chip parts

[Resistors, capacitors, etc.]

(1) Apply solder to the pattern as indicated in the figure.

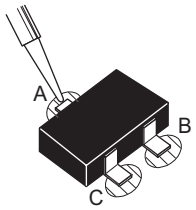


(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

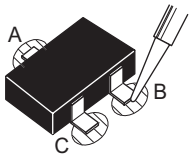


[Transistors, diodes, variable resistors, etc.]

(1) Apply solder to the pattern as indicated in the figure.
(2) Grasp the chip part with tweezers and place it on the solder.
(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.



SECTION 4
ADJUSTMENT

4.1 ADJUSTMENT PREPARATION

(1) **There are 2 ways of adjusting this TV : One is with the REMOTE CONTROL UNIT and the other is the conventional method using adjustment parts and components.**
(2) **The adjustment using the REMOTE CONTROL UNIT is made on the basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values.**
(3) Make sure that connection is correctly made AC to AC power source.
(4) Turn on the power of the TV and measuring instruments for warming up for at least 30 minutes before starting adjustments.
(5) If the receive or input signal is not specified, use the most appropriate signal for adjustment.
(6) Never touch the parts (such as variable resistors, transformers and condensers) not shown in the adjustment items of this service adjustment.

4.2 PRESET SETTING BEFORE ADJUSTMENT

Unless otherwise specified in the adjustment items, preset the following functions with the REMOTE CONTROL UNIT.

Item	Preset value
PICTURE MODE	BRIGHT
TINT / COLOUR / BRIGHT / CONT. / SHARP	Centre
VNR	OFF
BLUE BACK	OFF
OFF TIMER	OFF
AUTO SHUT OFF	OFF

4.3 MEASURING INSTRUMENT AND FIXTURES

(1) DC voltmeter (or digital voltmeter)
(2) Oscilloscope
(3) Signal generator
(Pattern generator : PAL / SECAM / NTSC)
(4) Remote control unit

4.4 ADJUSTMENT ITEMS

■ CHECK ITEM
- B1 VOLTAGE check

■ TUNER / IF CIRCUIT
- IF VCO adjustment
- DELAY POINT adjustment

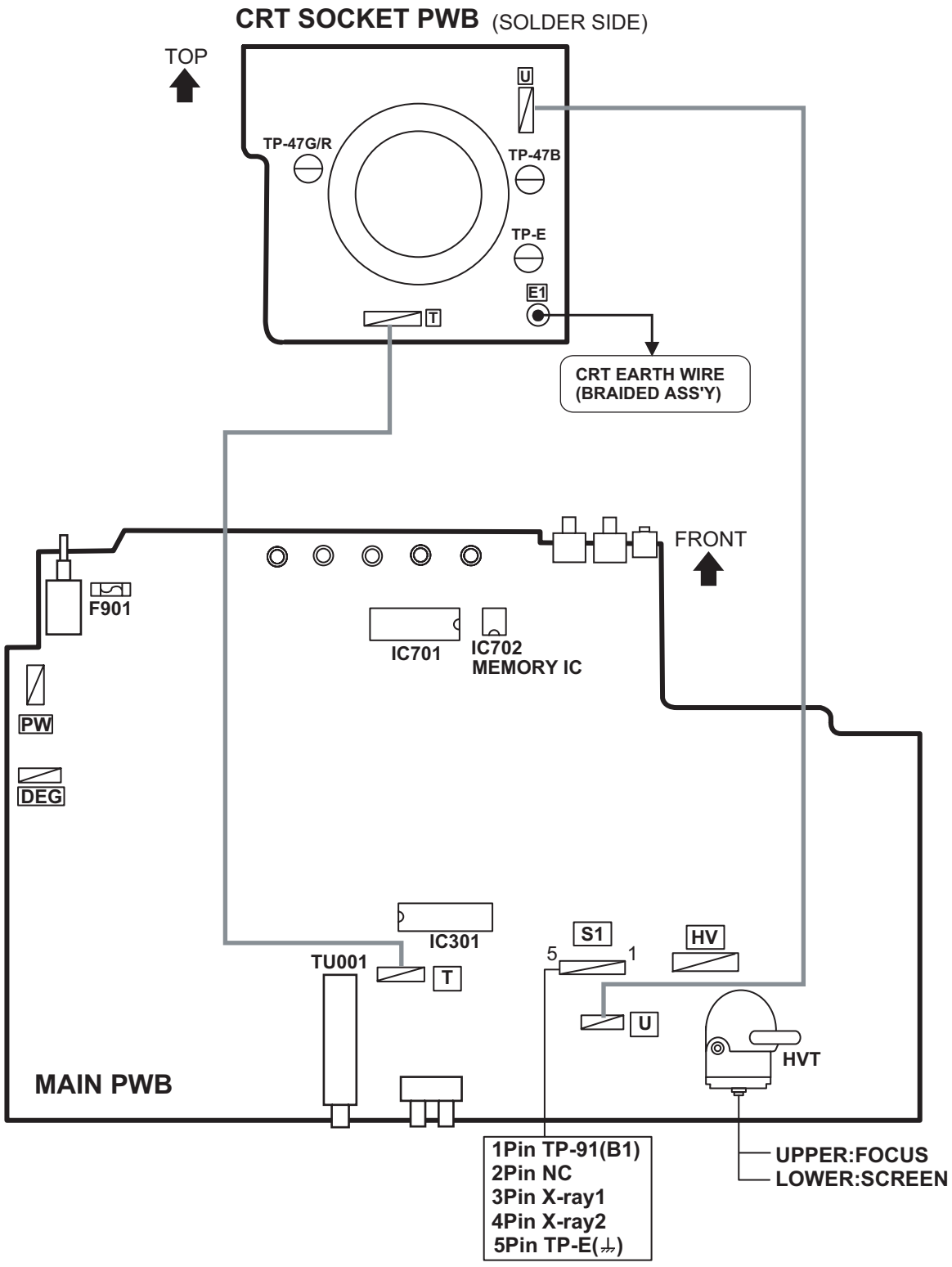
■ FOCUS
- FOCUS adjustment

■ DEFLECTION CIRCUIT
- V.HEIGHT / V.POSITION adjustment
- H. POSITION adjustment
- V.LINEARITY / V.S-CURVE adjustment

■ VIDEO CIRCUIT
- WHITE BALANCE adjustment
- SUB BRIGHT adjustment
- SUB CONTRAST adjustment
- SUB COLOUR adjustment
- SUB TINT adjustment
- SECAM BALACK OFFSET adjustment

■ VSM PRESET SETTING
- VSM PRESET setting

4.5 ADJUSTMENT LOCATIONS



4.6 BASIC OPERATION OF SERVICE MENU

4.6.1 TOOL OF SERVICE MENU OPERATION

Operate the SERVICE MENU with the REMOTE CONTROL UNIT.

4.6.2 SERVICE MENU ITEMS

With the SERVICE MENU, various adjustments can be made, and they are broadly classified in the following items of settings.

1.IF	Adjustment of the IF circuits.
2.V/C	Adjustment of the VIDEO circuit.
3.DEF	Adjustment of the DEFLECTION circuit.
4.VSM PRESET	Adjustment of the initial setting values of VSM condition as STANDARD, SOFT and BRIGHT.
5.PRESET	Adjustment of the RF circuit **[Do not adjust]**.
6.SETUP TOUR	It should be able to select mode (LANGUAGE and AUTO CH PRESET) **[Should be OFF]**.

4.6.3 HOW TO ENTER THE SERVICE MENU

Press the **[DISPLAY]** key and the **[PICTURE MODE]** key of the REMOTE CONTROL UNIT simultaneously. Then enter the SERVICE MENU mode as shown in Fig.1.

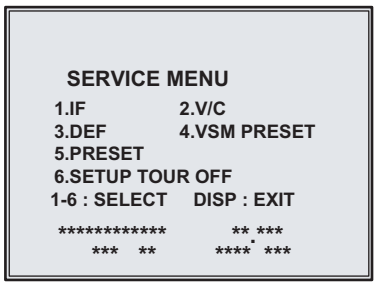
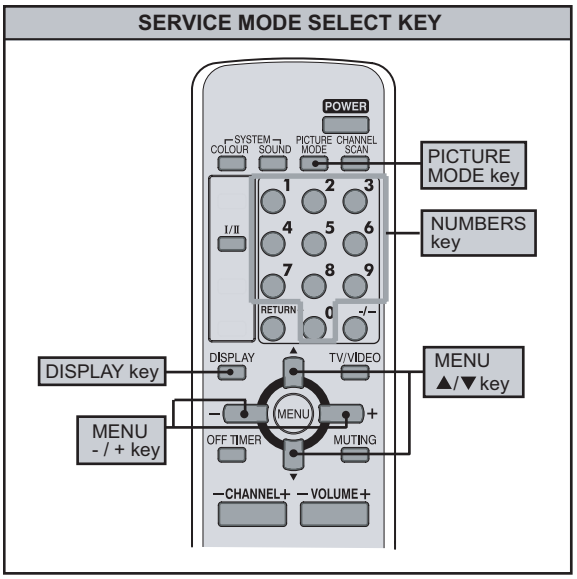


Fig.1



4.6.4 HOW TO STORE OF SETTING VALUE

The setting value will be stored automatically when release the REMOTE CONTROL UNIT keys.

4.6.5 HOW TO EXIT THE SERVICE MENU

When complete the adjustment work, press the **[DISPLAY]** key to return to the SERVICE MENU. And then press the **[DISPLAY]** key again to return to the normal screen.

4.6.6 SELECTION OF SUB MENU SCREEN

Press one of **[1]** to **[5]** keys of the REMOTE CONTROL UNIT and select the SUB MENU SCREEN form the SERVICE MENU.

4.6.7 METHOD OF SETTING

■ **1. IF**

[1. VCO]

(1) **[1]** key	Select **1. IF**.
(2) **[1]** key	Select **1. VCO**.
(3) **[MENU ▲/▼]** keys	Select setting items.
(4) **[MENU - / +]** keys	Adjust the values of the items.
(5) **[DISPLAY]** key	As you press this key twice, you will return to the **SERVICE MENU**.

[2. DELAY POINT]

(1) **[1]** key	Select **1. IF**.
(2) **[2]** key	Select **2. DELAY POINT**.
(3) **[MENU - / +]** keys	Set (adjust) the setting values of the setting items.
(4) **[DISPLAY]** key	When this is pressed twice, you will return to the **SERVICE MENU**.

NOTE:
When the setting value has been changed, the new value will be stored in memory immediately.

■ **2. V/C, 3. DEF and 4. VSM PRESET**

(1) **[2]** to **[4]** keys	Select one from **2. V/C**, **3. DEF** and **4. VSM PRESET**.
(2) **[MENU ▲/▼]** keys	Select setting items.
(3) **[MENU - / +]** keys	Adjust the values of the items.
(4) **[DISPLAY]** key	When this is pressed, return to the **SERVICE MENU**.

NOTE:
When the setting value has been changed, the new value will be stored in memory immediately.

■ **5. PRESET (Do not adjust)**

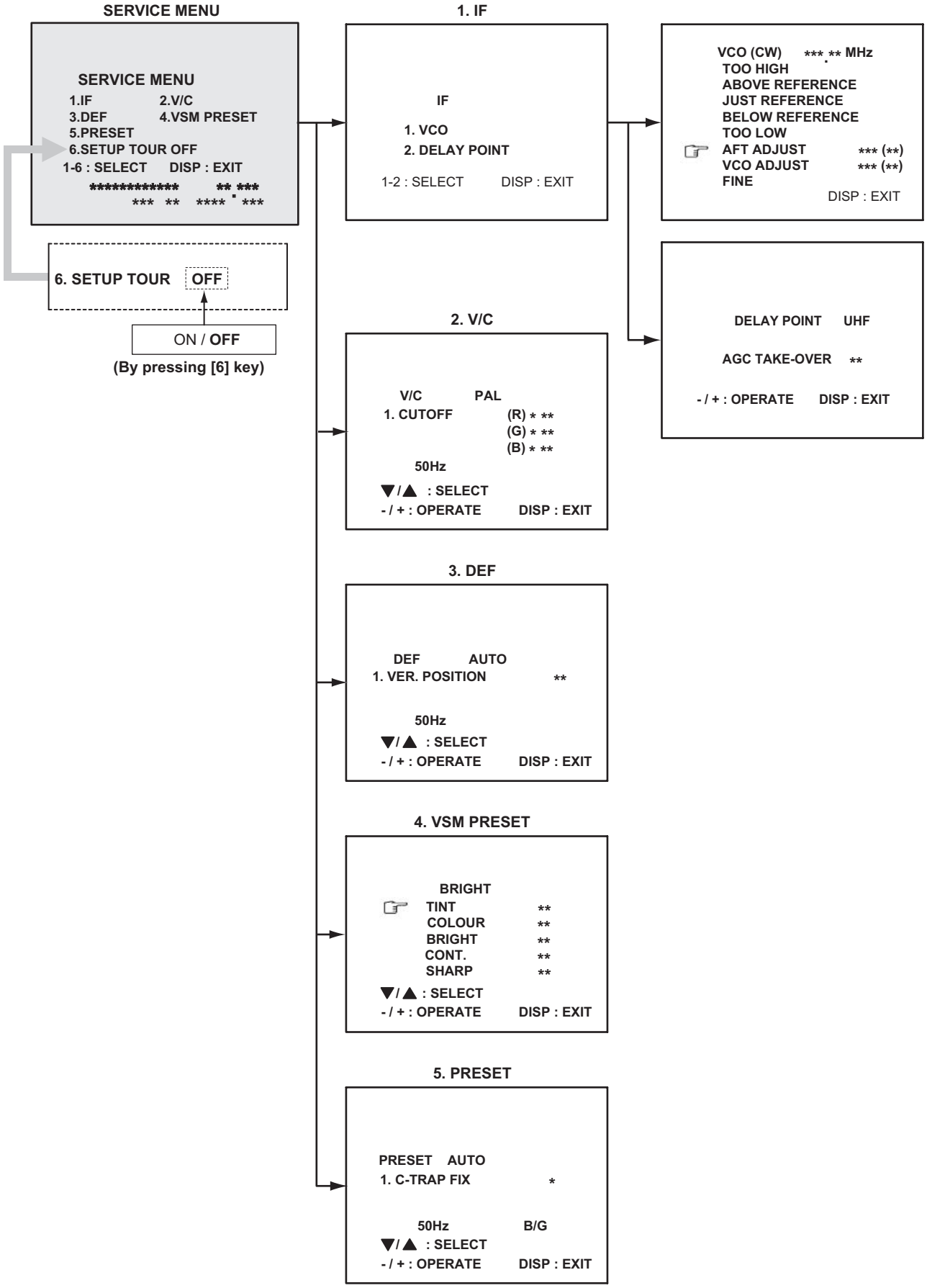
■ **6. SETUP TOUR**

(1) By pressing the **[6]** key, you can change the ON or OFF **[should be OFF]**.

Should be OFF:
If it is ON, when you turn off the power and turn on a power again, the JVC's logo will be shown about 15 seconds automatically, and the SETUP TOUR starts.

(2) **[MENU - / +]** keys	Select Language.
(3) **[MENU ▼]** key	Auto Search.

4.6.8 SERVICE MENU FLOW CHART



4.7 INITIAL SETTING VALUE OF SERVICE MENU

- **Adjustment of the SERVICE MENU is made on the basis of the initial setting values ; however, the new setting values which set the screen in its optimum condition may differ from the initial setting.**
- **Do not change the initial Setting Values of the Setting (Adjustment) items not listed in "ADJUSTMENT PROCEDURE".**

Setting item		Variable range	Initial setting value			
			PAL	SECAM	NTSC 3.58	NTSC 4.43
1.CUT OFF	RED	-128 - +127	-50	-50	-50	-50
	GREEN	-128 - +127	-50	-50	-50	-50
	BLUE	-128 - +127	-50	-50	-50	-50
2.DRIVE	RED	-128 - +127	+0	+0	+0	+0
	BLUE	-128 - +127	+0	+0	+0	+0
3.BRIGHT		-128 - +127	+0	+0	+0	+0
4.CONT.		-63 - +63	+0	+0	+0	+0
5.COLOUR		-63 - +63	+0	+0	+0	-5
6.TINT	TV	-63 - +63	---	---	---	---
	VIDEO	-63 - +63	---	---	+0	-1
7.SECAM BL ADJUST		-31 - +31	+0	+0	+0	+0
8.SHARP **(Do not adjust)**	TV	-31 - +31	+8 (Fixed)	+8 (Fixed)	+8 (Fixed)	+8 (Fixed)
	VIDEO	-31 - +31	+15 (Fixed)	+15 (Fixed)	+15 (Fixed)	+15 (Fixed)
9.AMP T. SHARP		-31 - +31	-12	-12	-12	-12

[3. DEFLECTION]

Setting item	Variable range	Initial setting value	
		fv : 50Hz	fv : 60Hz
1. VER. POSITION	-4 - +3	-1	-3
2. HOR. POSITION	-16 - +15	+3	+3
3. VER. HEIGHT	-64 - +63	-35	+1
4. VER. LINEARITY	-32 - +31	+15	-1
5. VER. SCURVE	-32 - +31	-32	+0
6. HOR. VCO ADJUST **[Do not adjust]**	-63 - +63	+0	+0

[4.VSM PRESET]

Setting item	Variable range	Initial setting value		
		BRIGHT	STANDARD	SOFT
TINT	0 - 30	15	15	15
COLOUR	0 - 30	15	15	15
BRIGHT	0 - 30	15	15	15
CONT.	0 - 30	30	18	14
SHARP	0 - 30	20	15	12

[5. PRESET]

The items in the following table, it is no requirement for adjustment.If values had changed by the miss operation, set the initial setting values in the following table.

● **COLOUR SYSTEM (Do not adjust)**

Setting item		Variable range	Initial setting value (Fixed value)			
			PAL	SECAM	NTSC 3.58	NTSC 4.43
1. C TRAP FIX		0 - 1	1	1	1	1
2. SHARP PEAK		0 - 1	0	0	0	0
3. ABL		0 - 1	1	1	1	1
4. GAMMA		0 - 1	0	0	0	0
5. Y. DELAY TIME	TV	0 - 3	0	2	2	3
	VIDEO	0 - 3	0	2	0	2
6. BLACK EXP START		0 - 3	3	3	3	3
7. C-BPF	TV	0 - 1	1	1	0	0
	VIDEO	0 - 1	1	1	1	1
8. CW / SCP		0 - 1	0	0	0	0
9. VIF DET LEVEL		-63 - +63	0	0	0	0
11. IF AGC MIN		0 - 1	0	0	0	0
12. VIF AGC		0 - 1	0	0	0	0
13. VIF PMOD		0 - 1	0	0	0	0
19. VNR		0 - 63	15	15	15	15
20. RGB LIM		0 - 1	1	1	1	1
21. RGB LIMIT LEVEL		0 - 7	2	2	2	2
23. TEXT H. POSITION		-16 - +15	-3	-3	-3	-3
24. READ DATA		---	---	---	---	---

● **SOUND SYSTEM (Do not adjust)**

Setting item	Variable range	Initial setting value (Fixed value)			
		B/G	I	D/K	M
10. SIF DET LEVEL	-7 - +7	+0	+0	+0	+0
14. SIF BPF BW ADJUST	-7 - +7	(-)	(-)	(-)	(-)
15. SIF TRAP FO ADJUST	-7 - +7	(-)	(-)	(-)	(-)
16. SIF TRAP FO ADJUST 2	-7 - +7	(-)	(-)	(-)	(-)
17. SIF -TRAP	0 - 1	0	0	0	0
18. SIF -BPF	0 - 1	0	0	0	1
22. SIF SW	0 - 1	1	1	1	0

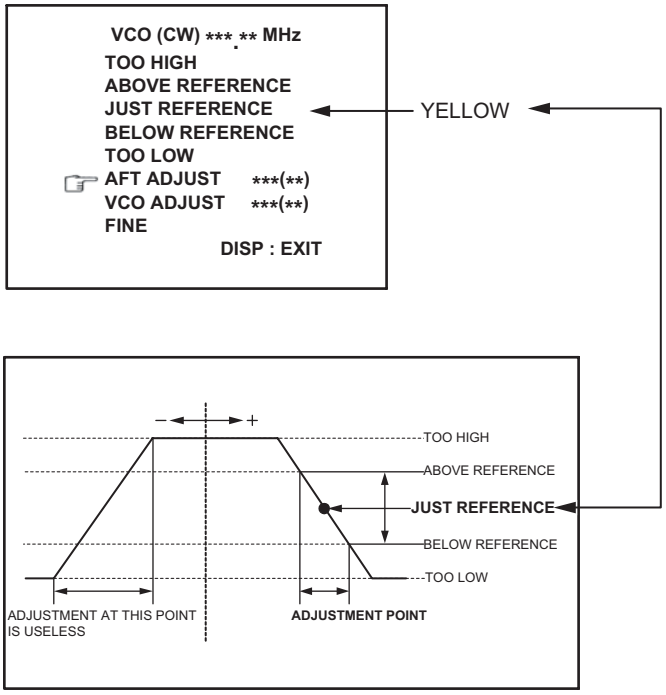
4.8 ADJUSTMENT PROCEDURE

4.8.1 CHECK ITEM

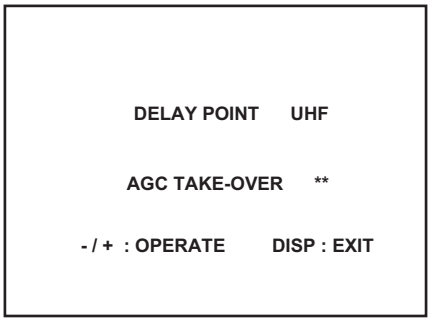
Item	Measuring instrument	Test point	Adjustment part	Description
B1 VOLTAGE	Signal generator DC voltmeter	TP-B1 : 1-pin TP-E : 5-pin (S1 connector) [MAIN PWB]		(1) Receive a whole black signal. (2) Connect a DC voltmeter to 1-pin and 5-pin of S1 connector. (3) Make sure that the voltage is DC116.2V±2.0V.

4.8.2 TUNER / IF CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description
IF VCO	Signal generator Remote control unit		[1. IF] 1. VCO	• Please use a signal generator which frequency output is correctly calibrated. (1) Receive any broadcast. (2) Select 1.IF from the SERVICE MENU. (3) Select **< 1.VCO >**. (4) Select VCO ADJUST with **[MENU ▲/▼]** key. (5) Press **[MENU - / +]** keys until the colour of the characters TOO HIGH changes blue to yellow. Then gradually press the **[MENU - / +]** keys until the TOO LOW changes yellow. At this time, confirm that the value of VCO ADJUST is near +00. (6) Select AFT ADJUST with **[MENU ▲/▼]** key. (7) Press **[MENU - / +]** keys until the characters JUST REFERENCE changes blue to yellow. (8) Press the **[DISPLAY]** key three times to return to normal screen.



Item	Measuring instrument	Test point	Adjustment part	Description
DELAY POINT (AGC)	Signal generator Remote control unit		[1. IF] 2. DELAY POINT (AGC TAKE-OVER)	(1) Receive a black and white signal (colour off). (2) Select 1. IF. (3) Select **< 2. DELAY POINT >**. (4) Set the setting values of the setting items as shown bellow table. (5) Then adjust the **[MENU - / +]** keys until video noise disappears. (6) Turn to other channels and make sure that there are no irregularities.



Setting Item		Variable range	Initial setting value
DELAY POINT (AGC TAKE-OVER)	NTSC3.58	0 - 127	45
	OTHER		35

4.8.3 FOCUS

Item	Measuring instrument	Test point	Adjustment part	Description
FOCUS	Signal generator		FOCUS VR [In HVT]	(1) Receive a crosshatch signal. (2) While watching the screen, adjust the FOCUS VR to make the vertical and horizontal lines as fine and sharp as possible. (3) Make sure that when the screen is darkened, the lines remain in good focus.

4.8.4 DEFLECTION CIRCUIT

- There are 2 modes of adjustment (setting value) 50Hz mode and 60Hz mode, depending upon the kind of signals (vertical frequency 50Hz / 60Hz).
- When adjusted in 50Hz mode and 60Hz mode will be automatically set.
  The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values.The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
- Make sure that the adjustment is properly done on the screen of 60Hz mode.

NOTE:

- Adjust to make both 50Hz & 60Hz are the same v. size and fine straight line.
- When adjust again, adjust 50Hz mode first.
- When adjust in 60Hz mode, only 60Hz mode is adjust.

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>V. HEIGHT /
V. POSITION</td><td>Signal generator

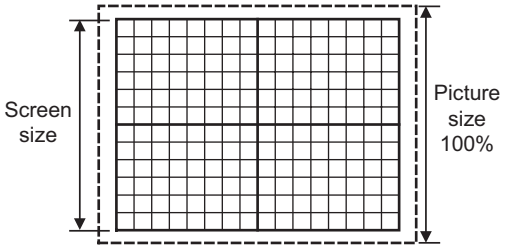
Remote control unit</td><td></td><td>[3. DEF]
1. VER. POSITION
3. VER. HEIGHT</td><td rowspan="2">(1) Receive a crosshatch signal.
(2) Select 3. DEF from the SERVICE MENU.
(3) Select < 1. VER. POSITION >.
(4) Set the initial setting value of < 1. VER. POSITION >.
(5) Adjust < 1. VER. POSITION > to make the vertical centre fall on the display centre.
(6) Select <3. VER. HEIGHT >.
(7) Set the initial setting value of <3. VER. HEIGHT >.
(8) Adjust <3. VER. HEIGHT > to make the vertical screen size be 92% of the picture size.</td></tr>
<tr><td colspan="4"> 

Fig.1</td></tr>
<tr><td>H. POSITION</td><td>Signal generator

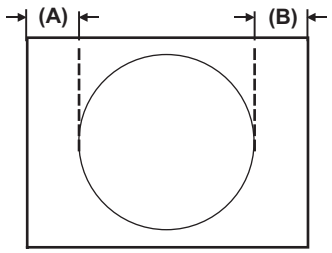
Remote control unit</td><td></td><td>[3. DEF]
2. HOR. POSITION</td><td rowspan="2">(1) Receive a circle pattern signal.
(2) Select 3. DEF from the SERVICE MENU.
(3) Select < 2. HOR. POSITION >.
(4) Set the initial setting value of < 2. HOR. POSITION >.
(5) Adjust <2.HOR. POSITION> to be equal the width of (A) and (B) as shown in Fig.2.</td></tr>
<tr><td colspan="4"> 

Fig.2</td></tr>
<tr><td>V.LINEARITY /
V.S-CURVE</td><td>Signal generator

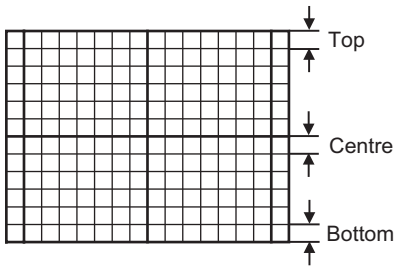
Remote control unit</td><td></td><td>[3. DEF]
4. VER. LIN.
5. VER. SCURVE</td><td rowspan="2">• If the vertical linearity is noticeably deteriorated, perform the following steps.
(1) Receive a crosshatch signal.
(2) Select 3. DEF from the SERVICE MENU.
(3) Select < 4. VER. LIN. >.
(4) Set the initial setting value of < 4. VER. LIN. >.
(5) Select < 5. VER. SCURVE >.
(6) Set the initial setting value of < 5. VER. SCURVE >.
(7) Adjust < 4. VER. LIN. > and < 5. VER. SCURVE > so that the space of upper and lower lines as shown in Fig.3 on TOP, CENTRE and BOTTOM become uniform.</td></tr>
<tr><td colspan="4"> 

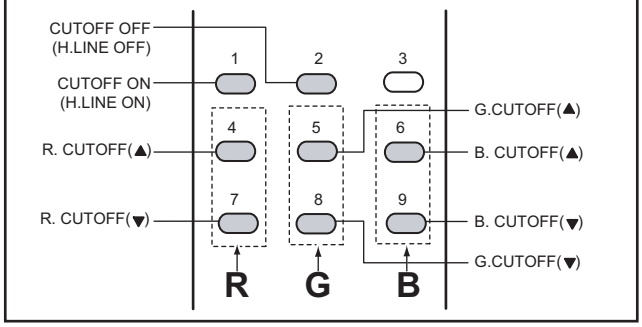
Fig.3</td></tr>
</table>

4.8.5 VIDEO CIRCUIT

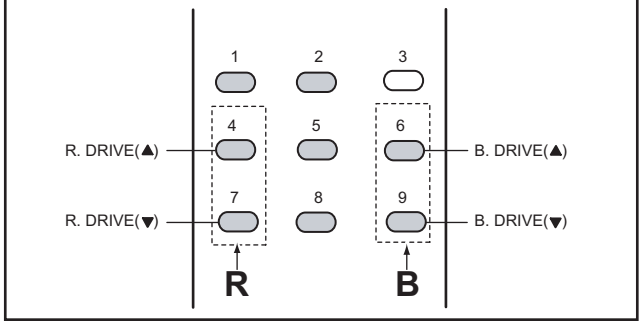
The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values. Do not change the initial setting values of the setting items not listed in "ADJUSTMENT PROCEDURE".

Item	Measuring instrument	Test point	Adjustment part	Description
WHITE BALANCE (LOW LIGHT)	Signal generator Remote control unit		[2.V/C] 1. CUT OFF (R) 1. CUT OFF (G) 1. CUT OFF (B) SCREEN VR [IN HVT]	(1) Receive a black and white signal (colour off). (2) Select 2. V/C from the SERVICE MENU. (3) Select **< 1. CUT OFF >**. (4) Set the initial setting value of **< 1. CUT OFF >**. (5) Press the **[1]** key to show the single horizontal line on screen. (6) Turn the SCREEN VR fully counter-clockwise, then slowly turn it clockwise to where one of a red, blue or green colour is faintly visible. (7) Adjust the two colors which did not appear until the single horizontal line that is displayed becomes white using the **[4]** to **[9]** keys. (8) Turn the SCREEN VR to where the single horizontal line glows faintly. (9) Press the **[2]** key to turn off the single horizontal line. (10) Press the **[DISPLAY]** key twice to return to the normal screen.
WHITE BALANCE (HIGH LIGHT)	Signal generator Remote control unit		[2.V/C] 2. DRIVE (R) 2. DRIVE (B)	(1) Receive a black and white signal (colour off). (2) Select 2. V/C from the SERVICE MENU. (3) Select **< 2. DRIVE >**. (4) Set the initial setting value of **< 2. DRIVE >**. (5) Adjust the screen until it becomes white using the **[4]**, **[6]**, **[7]** and **[9]** keys. (6) Press the **[DISPLAY]** key twice to return to the nomal screen.
SUB BRIGHT	Remote control unit		[2. V/C] 3. BRIGHT	(1) Receive any broadcast. (2) Select 2. V/C from the SERVICE MENU. (3) Select **< 3. BRIGHT >**. (4) Set the initial setting value of **< 3. BRIGHT >**. (5) If the brightness is not the best with the initial setting value, make fine adjustment until you get the best brightness.
SUB CONTRAST	Remote control unit		[2. V/C] 4. CONT.	(1) Receive any broadcast. (2) Select 2. V/C from the SERVICE MENU. (3) Select **< 4. CONT >**. (4) Set the initial setting value of **< 4. CONT >**. (5) If the contrast is not the best with the initial setting value, make fine adjustment until you get the best contrast.

KEY ASSIGNMENT OF REMOTE CONTROL UNIT



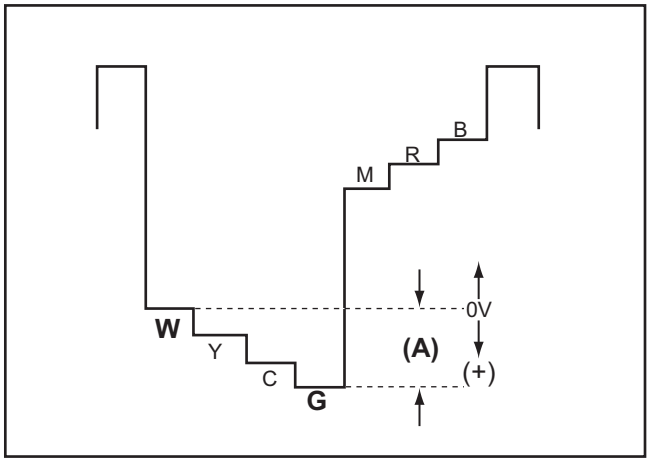
KEY ASSIGNMENT OF REMOTE CONTROL UNIT



<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td rowspan="2">SUB COLOUR</td><td>Remote control unit</td><td></td><td>[2. V/C]
5. COLOUR
(PAL / SECAM / NTSC)</td><td>[Method of adjustment without measuring instrument]
PAL COLOUR
(1) Receive a PAL broadcast.
(2) Select 2. V/C from the SERVICE MENU.
(3) Select < 5. COLOUR >.
(4) Set the initial setting value of < 5. COLOUR >.
(5) If the colour is not the best with the initial setting value, make fine adjustment until you get the best colour.
SECAM COLOUR
(1) Receive a SECAM broadcast.
(2) Make fine adjustment of SECAM COLOUR as previously.
NTSC 3.58 COLOUR
(1) Receive a NTSC 3.58MHz broadcast.
(2) Make similar fine adjustment of NTSC 3.58 COLOUR as previously.
NTSC 4.43 COLOUR
(1) When NTSC 3.58 adjustment completed, NTSC 4.43 will be automatically set at the respective values.</td></tr>
<tr><td>Signal generator

Oscilloscope

Remote control unit</td><td>TP-47G/R
TP-E
[CRT SOCKET PWB]</td><td>[2. V/C]
5. COLOUR
(PAL / SECAM / NTSC)</td><td>[Method of adjustment using measuring instrument]
PAL COLOUR
(1) Receive a PAL full field colour bar signal (75% white).
(2) Select 2. V/C from the SERVICE MENU.
(3) Select < 5. COLOUR >.
(4) Set the initial setting value of < 5. COLOUR >.
(5) Connect the oscilloscope between TP-47G/R and TP-E.
(6) Adjust PAL COLOUR to bring the value of (A) in the voltage table.
SECAM COLOUR
(1) Receive a SECAM full field colour bar signal (75% white).
(2) Set the initial setting value of SECAM COLOUR .
(3) Adjust SECAM COLOUR to bring the value of (A) in the voltage table.
NTSC 3.58 COLOUR
(1) Receive a NTSC 3.58 full field colour bar signal (75% white).
(2) Set the initial setting value of NTSC 3.58 COLOUR.
(3) Adjust NTSC 3.58 COLOUR to bring the value of (A) in the voltage table.
NTSC 4.43 COLOUR
(1) When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.</td></tr>
</table>

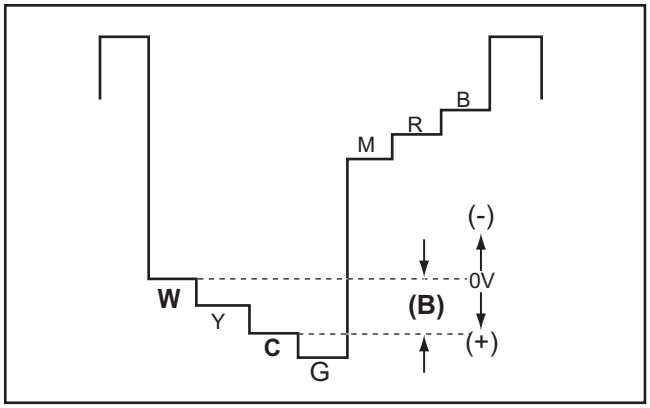


MODEL	Voltage setting (A)			
	PAL	SECAM	NTSC3.58	NTSC4.43
AV-21D116/B	+12V	+3V	+6V (VDO)	---

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td rowspan="2">SUB TINT</td><td>Signal generator

Remote control unit</td><td></td><td>[2. V/C]
6. TINT</td><td>[Method of adjustment without measuring instrument]
NTSC 3.58 TINT
(1) Receive a NTSC 3.58 full field colour bar signal (75% white).
(2) Select 2. V/C from the SERVICE MENU.
(3) Select < 6. TINT >.
(4) Set the initial setting value of < 6. TINT >.
(5) If you cannot get the best tint with the initial setting value, make fine adjustment until you get the best tint.
NTSC 4.43 TINT
(1) When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.</td></tr>
<tr><td>Signal generator

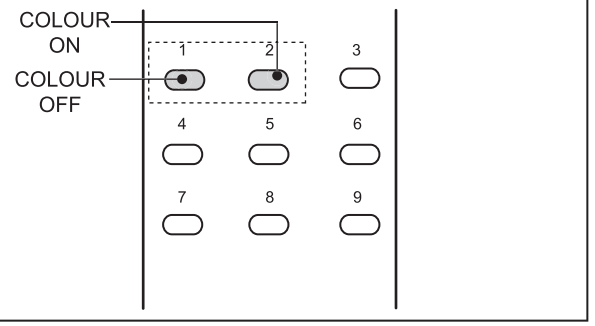
Oscilloscope

Remote control unit</td><td>TP-47G/R
TP-E
[CRT SOCKET PWB]</td><td>[2. V/C]
6. TINT</td><td rowspan="2">[Method of adjustment using measuring instrument]
NTSC 3.58 TINT
(1) Receive a NTSC 3.58 full field colour bar signal (75% white).
(2) Select 2. V/C from the SERVICE MENU.
(3) Select < 6. TINT >.
(4) Set the initial setting value of < 6. TINT >.
(5) Connect the oscilloscope between TP-47G/R and TP-E.
(6) Adjust NTSC 3.58 TINT to bring the value of (B) in the voltage table in the left.
NTSC 4.43 TINT
(1) When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.</td></tr>
<tr><td colspan="3"> 

<table>
<tr><th rowspan="2">MODEL</th><th colspan="2">Voltage setting (B)</th></tr>
<tr><th>NTSC3.58</th><th>NTSC4.43</th></tr>
<tr><td>AV-21D116/B</td><td>+4V (VDO)</td><td>---</td></tr>
</table></td></tr>
</table>

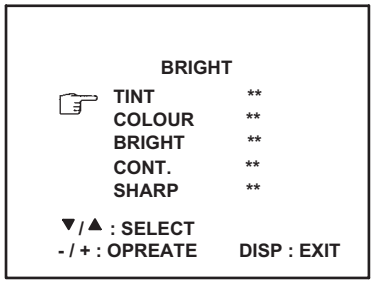
Item	Measuring instrument	Test point	Adjustment part	Description
SECAM BLACK OFFSET	Signal generator Remote control unit		[2. V/C] 7. SECAM BL ADJUST	(1) Input a SECAM full field colour bar signal. (2) Select 2. V/C from the SERVICE MENU. (3) Select **< 7. SECAM BL ADJUST >**. (4) Set the initial setting value of **< 7. SECAM BL ADJUST >**. (5) Switch the **[1]** key (colour OFF) and **[2]** key (colour ON) and make sure that there is no colour on the black and white screen. (6) If the black and white screen is not best with the initial setting value, make fine adjustment until you get the best black and white screen. (7) While watching the screen, adjust the value to be the same colour between ON & OFF by **[1]** or **[2]** key. (8) Press the **[DISPLAY]** key twice to return to the normal screen.

KEY ASSIGNMENT OF REMOTE CONTROL UNIT



4.8.6 VSM PRESET SETTING

Item	Measuring instrument	Test point	Adjustment part	Description
VSM PRESET	Remote control unit		[4. VSM PRESET] TINT COLOUR BRIGHT CONT. SHARP	(1) Select 4. VSM PRESET from the SERVICE MENU. (2) Set the PICTURE MODE to BRIGHT. (3) Select **< TINT >**. (4) Set the initial setting value of **< TINT >** as shown in the below table. (5) Select **< COLOUR >** to **< SHARP >** in turn, and set the values. (6) Respectively select the **"SOFT"** and **"STANDARD"**. Make similar adjustment as same step as above.



• VSM PRESET

Setting item	BRIGHT	STANDARD	SOFT
TINT	15	←	←
COLOUR	15	←	←
BRIGHT	15	←	←
CONT.	30	18	14
SHARP	20	15	12

SECTION 5
TROUBLESHOOTING

This service manual does not describe TROUBLESHOOTING.

JVC
Victor Company of Japan, Limited
Display Category 12, 3-chome, Moriya-cho, Kanagawa-ku, Yokohama-city, Kanagawa-prefecture, 221-8528, Japan

(No.YA396)

Printed in Japan
VPT

JVC

COLOUR TELEVISION

INSTRUCTIONS

Thank you for buying this JVC colour television.
To make sure you understand how to use your new TV, please read this manual thoroughly before you begin.

AV-14F116
AV-21B116
AV-21C116
AV-21D116
AV-21V116

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GGT0111-001A-H
0306-NIC-JMT

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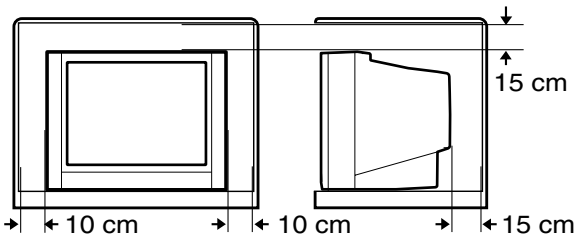
Safety precautions

WARNING

• To prevent fire or shock hazard, do not expose the TV to rain or moisture.

CAUTION

- Operate only from the power source indicated on the rear of the TV.
- Avoid damaging the power cord and mains plug. When you unplug the TV, pull it out by the mains plug. Do not pull on the power cord.
- Never block or cover the cabinet openings for ventilation. Never install the TV where good ventilation is unattainable. When installing this TV, leave spaces for ventilation around the TV more than the minimum distances shown in the diagram.

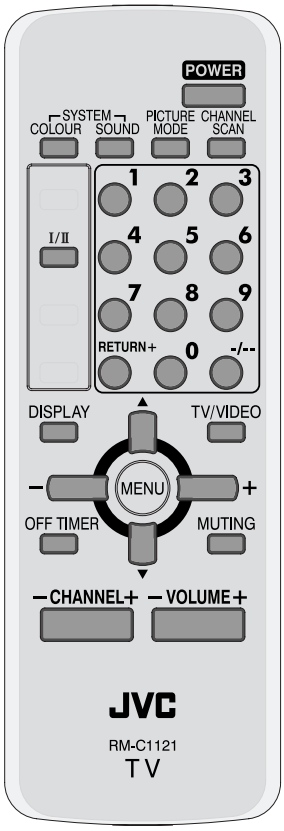


- Do not allow objects or liquid into the cabinet openings.
- In the event of a fault, unplug the TV and call a service technician. Do not attempt to repair it by yourself or remove the rear cover.
- The surface of the TV screen is easily damaged. Be very careful with it when handling the TV. Should the TV screen become soiled, wipe it with a soft dry cloth. Never rub it forcefully. Never use any cleaner or detergent on it.
- This TV can be turned on/ off power by connecting/ disconnecting the AC Plug into AC outlet. While this TV is being installed, enough space should be reserved for connecting/ disconnecting the AC Plug into AC outlet by hand.

Preparation

1 Confirm which remote control you have

RM-C1121

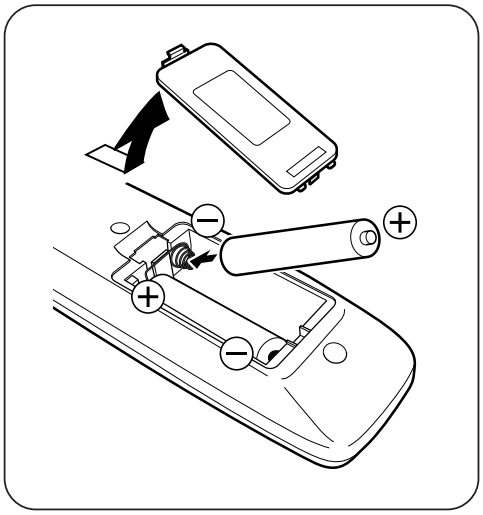


2 Inserting the batteries

Correctly insert two batteries, observing the ⊕ and ⊖ polarities and inserting the ⊖ end first.

CAUTION:
Follow the cautions printed on the batteries.

Notes:
- Use AA/R6/UM-3 dry cell batteries.
- If the remote control does not work properly, fit new batteries.
  The supplied batteries are for testing, not regular use.

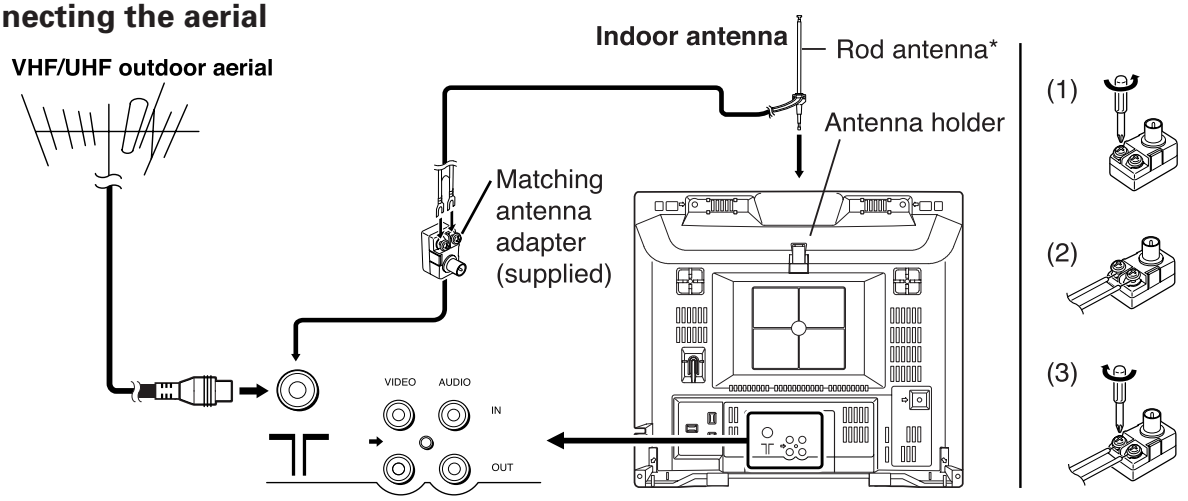


3 Connecting the aerial and external devices

- For further details, refer to the manuals provided with the devices you are connecting.
- Connecting cables are not supplied.
- The front and rear AUDIO/VIDEO input jacks are directly connected so that input to either jack is output through both. You cannot provide input to both the front and rear jacks at the same time. Disconnect one input, or use one of the jacks as an output jack only (for monitoring or recording).

■ Connecting the aerial and VCR

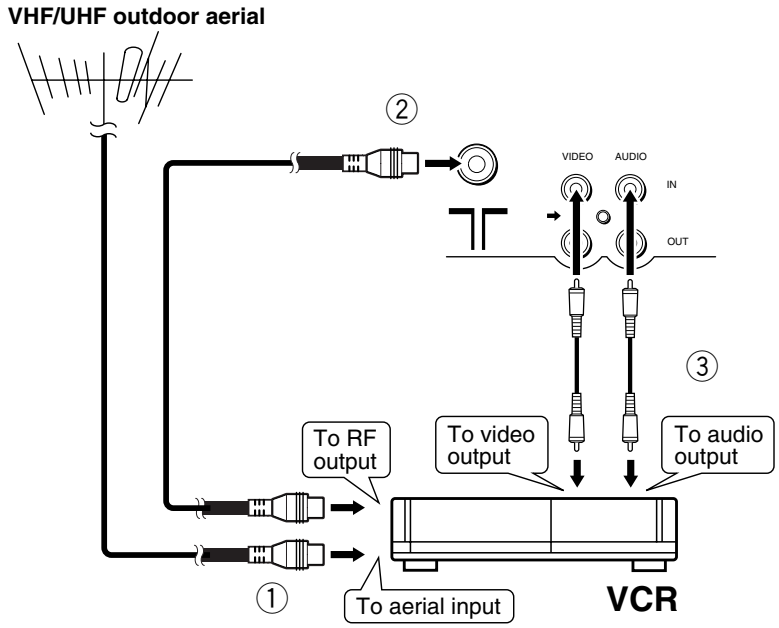
Connecting the aerial



* AV-14F116 only.

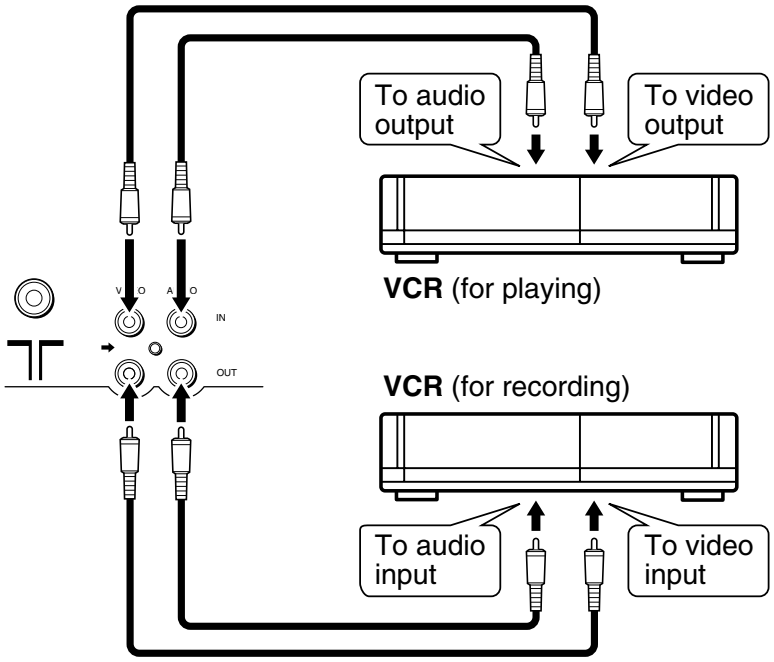
• Illustration of AV-14F116

Connecting the aerial and VCR

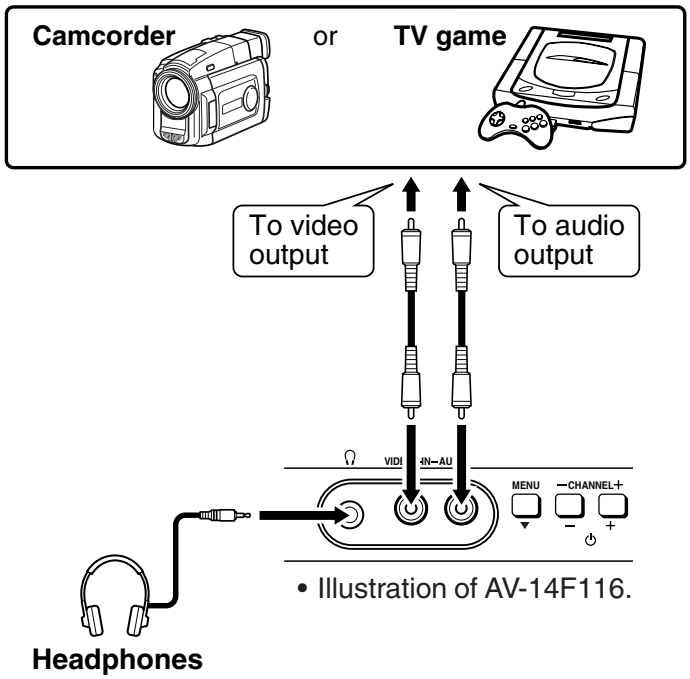


• Illustration of AV-14F116.

■ Connecting other external devices



• Illustration of AV-14F116.



• Illustration of AV-14F116.

• Use the headphones with a stereo mini jack (3.5 mm in diameter). When you connect the headphones, the TV speakers go off.

4 Connecting the power cord

Connect the power cord to the AC outlet.
Operate only from the power source indicated on the rear of the TV.

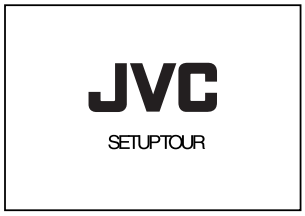
5 SETUP TOUR

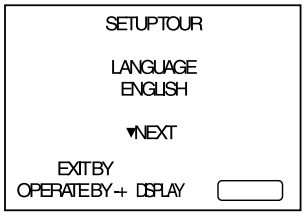
When the TV is first turned on it enters the SETUP TOUR mode, and the JVC logo is displayed. Follow the instructions on the on-screen display to perform the SETUP TOUR.

- In case of resetting that the reason for such as removal, you can set the SETUP TOUR function on the "MENU 3" menu. For details, see page 13.

1 Press the Main power button on the TV.

The POWER lamp or POWER/ON TIMER lamp lights. After the JVC logo has been displayed, the TV automatically switches to the language setting mode.

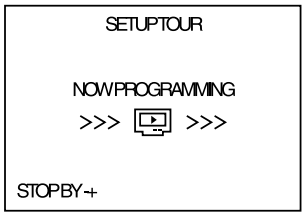




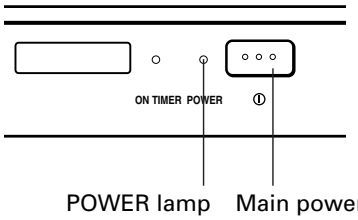
2 Press the MENU –/+ buttons to select the on-screen language.

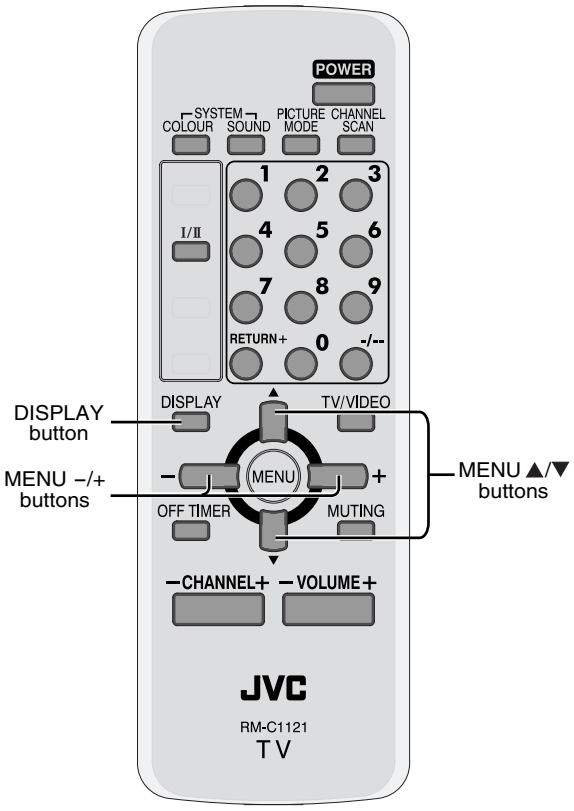
3 Press the MENU ▼ button.

The AUTO PROGRAMMING function will start and the indicator blinks.



- Illustration of AV-14F116



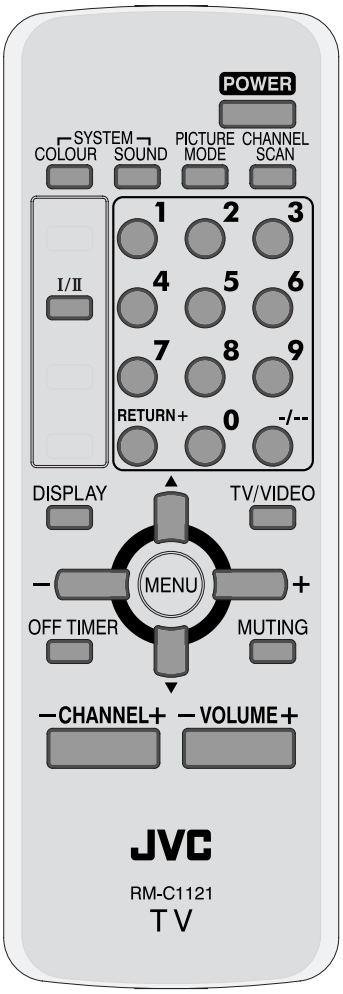


- To stop the AUTO PROGRAMMING function, press the MENU –/+ buttons. When you press stop, it will display "SETUP TOUR THANK YOU!".

When all the TV channels that can be received on your TV have been preset, the display goes out and the AUTO PROGRAMMING function operation is completed.

- If a TV channel you want to view is not set to the channel, set it with the MANUAL CH PRESET function. For details, see page 14.

Basic operation



1 Press the POWER button to turn your TV on.

- If your TV does not turn on, press the Main power button on the TV then press the POWER button again.
- You can also turn on your TV by pressing any of the following buttons;
  - the CHANNEL –/+ button
  - the Number buttons
  - the TV/VIDEO button

2 Select a channel.

■ Press the CHANNEL –/+ button.

- Up/down selection cannot be selected for channels to which the SKIP has been set to “YES”. See page 15.

■ Press the Number buttons to enter the channel number.

- If you want to enter a two-digit number, press the -/-- button to select the two digit mode “--”, then enter the channel number.

3 Press the VOLUME –/+ button to adjust the sound.

4 To turn your TV off, press the POWER button.

- We recommend that you press the Main power button on the TV to turn the main power off if you do not plan to use your TV for a long time or if you wish to save energy.

If the picture is not clear:
Press the COLOUR SYSTEM button to select another colour system, see page 8.

If the sound is not clear:
Press the SOUND SYSTEM button to select another sound system, see page 8.

Viewing Images from an External Device:
Press the TV/VIDEO button to select the VIDEO mode.

- You can also use the INPUT function to select the VIDEO mode. For details, refer to page 11.

Remote control buttons and functions

PICTURE MODE button

You can select one of three picture adjustment settings as you like.

Press this button to select a mode.

BRIGHT:
Heightens contrast and sharpness.

STANDARD:
Standardizes picture adjustments.

SOFT:
Softens contrast and sharpness.

- Pressing this button returns all the picture settings in the "MENU 4" to their default settings.

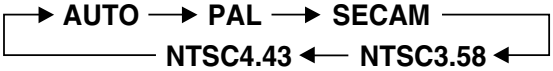
COLOUR SYSTEM button

If the picture is not clear or no colour appears, change the current colour system to another colour system.

Press this button to select the colour system.

In TV mode (channel 1 to 99 and AV):

In VIDEO mode:



AUTO:
Automatic colour system selection.

- If the picture is not normal in the AUTO mode, change the AUTO mode to another colour system.

SOUND SYSTEM button

If the sound is not clear even when the picture appears normal, change the current sound system to another sound system.

Press this button to select the sound system.

- You cannot select any sound system when in a VIDEO mode.

I/II button

You can select one of the two bilingual sounds in an A2 stereo programme's bilingual programme. Press the A2 Bilingual button to select a bilingual sound.

I : Bilingual I sound
II : Bilingual II sound

- The A2 Bilingual function has no effect on stereo programmes of the A2 stereo broadcast programme type, although an A2 Bilingual function indicator will appear on the screen.
- The A2 Bilingual function has no effect on programmes other than A2 stereo broadcast programme type, although an A2 Bilingual function indicator will appear on the screen.
- The A2 Bilingual function has no effect in Video mode, although an A2 Bilingual function indicator will appear on the screen.

DISPLAY button

You can continuously display the current channel number or VIDEO mode on the screen.

Press this button.

To turn the display off, press this button again.

- When selecting a channel or VIDEO mode with no input signal, indication of selected channel or VIDEO mode becomes fixed on the screen.

RETURN + button

You can set a channel you frequently view to the Return Channel and you can view that channel at any time with one-touch.

To set the channel to the Return Channel:

1 **Select the channel you want to set to the Return Channel.**

2 **Press this button and hold until the message "RETURN PLUS PROGRAMMED!" appears.**

- When you turn off the TV, the Return Channel setting is cancelled.

To view the Return Channel:
Press this button.

- You can view two channels (current channel and Return Channel) alternately by pressing this button.

To cancel the Return Channel setting:
Press this button and hold until the message"RETURN PLUS CANCELLED!" appears.

If no channel is set to the Return Channel:
You can view the channel selected right before the current channel by pressing this button.

CHANNEL SCAN button

You can quickly view all TV channels programmes that you can view on your TV, and search for the programme you want to view.

1 **Press this button to start scanning TV channels.**

The TV channel programmes are each displayed for several seconds.

- The programmes of TV channels for which the SKIP function is set to "YES" are not displayed. (See page 15.)

2 **When you find the programme you want to view, press this button again to stop scanning.**

MUTING button

You can turn the sound off instantly.

Press this button.

To turn the sound on, press this button again.

OFF TIMER button

You can set the TV to automatically turn off after a set time.

Press this button to select the period of time.

- You can set the period of time to a maximum of 120 minutes in 10 minute increments.
- 1 minute before the OFF TIMER function turns off the TV, "GOOD NIGHT!" appears.

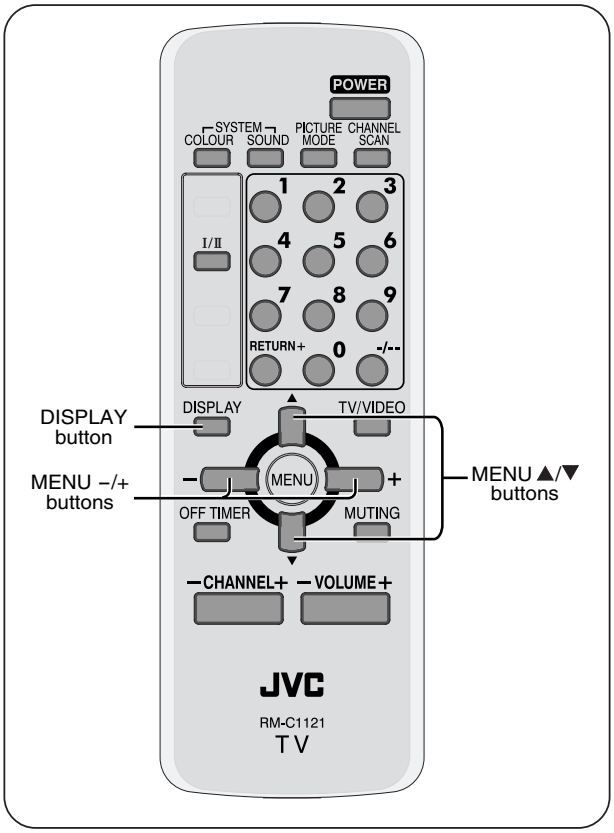
To display the remaining time, press this button once.

To cancel the OFF TIMER function, press this button to set the period of time to 0.

- The OFF TIMER function will not turn off the TV's main power.

Using the TV's menus

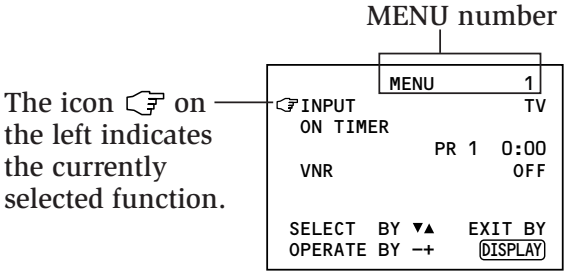
This TV has a number of functions you can operate using the menus. To use all your TV's functions fully, you need to understand how to use the menus.



■ Basic operation

1 Press the MENU ▲/▼ buttons.

One of the 4 menus is displayed.



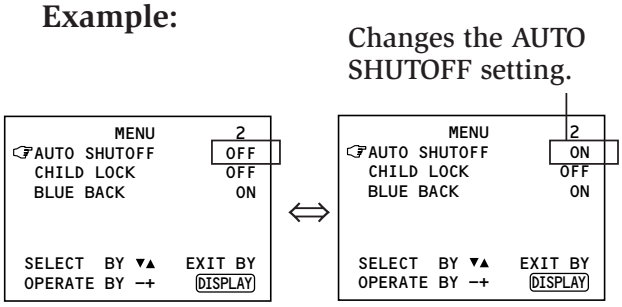
2 Repeatedly press the MENU ▲/▼ buttons to display a desired menu.

- If you hold down the ▼ button, the next menu is displayed.
- If the selected function is on the first line, pressing the ▲ button displays the preceding menu.

3 Repeatedly press the MENU ▲/▼ buttons to select a desired function.

4 Press the MENU –/+ buttons to change function settings.

Example:



- With some functions, the operation method may differ.

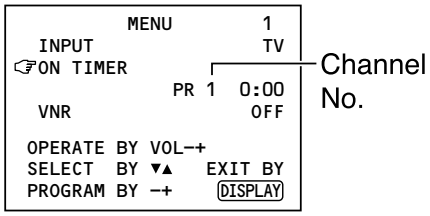
5 Press the DISPLAY button to turn the display off.

- To operate a menu using the buttons on the front panel of the TV, refer to "Operating menus" on page 17.

ON TIMER

Your TV will automatically turn on and tune into the channel you set after the period of time you set.

1 Press MENU ▲/▼ to display the "MENU 1" menu, then select "ON TIMER".



2 Press MENU –/+ to select a channel you want to view when the TV turns on.

3 Press VOLUME –/+ to select the period of time after which you want to turn on the TV.

The ON TIMER function starts.

- Each time you press the button, the period of time changes in 15 minute intervals (up to 12 hours).

To cancel the ON TIMER function, press the VOLUME –/+ button to set the period of time to "0:00".

4 Press DISPLAY to turn the display off.

- If you turn off the TV's main power by pressing the Main power button, the ON TIMER function is canceled.
- If you do not turn off the TV after starting the ON TIMER function, the channel will automatically switch to the channel set for the ON TIMER function.

When the time set for the ON TIMER function is reached:

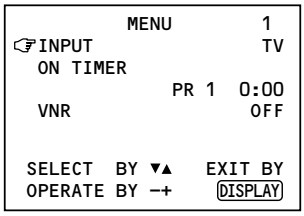
The TV automatically turns on and the channel set for the ON TIMER function is displayed.

- For safety reasons the TV will automatically turn off if no operations are made within approximately two hours after the TV is turned on with the ON TIMER function.
- The OFF TIMER function and AUTO SHUTOFF function have priority over the ON TIMER function.

INPUT

You can view images from VCRs or other devices connected to your TV.

1 Press MENU ▲/▼ to display the "MENU 1" menu, then select "INPUT".



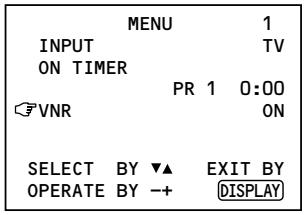
2 Press MENU –/+ to select the VIDEO mode.

While you press MENU –/+, it will switch to TV mode and VIDEO mode alternately.

VNR (Video Noise Reduction)

You can reduce the picture noise.

1 Press MENU ▲/▼ to display the "MENU 1" menu, then select "VNR".



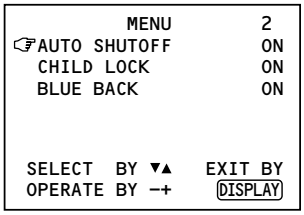
2 Press MENU –/+ to select "ON".

To cancel the VNR function, select "OFF".

AUTO SHUTOFF

You can set your TV to turn off if no signals are received for about 15 minutes or longer after the end of a broadcast.

1 Press MENU ▲/▼ to display the "MENU 2" menu, then select "AUTO SHUTOFF".



2 Press MENU –/+ to select "ON".

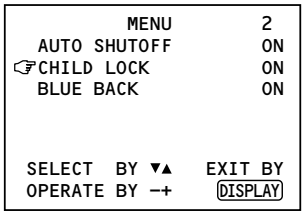
To cancel the AUTO SHUTOFF function, select "OFF".

- The AUTO SHUTOFF function does not turn off the TV's main power.
- The AUTO SHUTOFF will not work for a VIDEO mode.

CHILD LOCK

You can disable the front control buttons of the TV.
When this function is set to "ON", the TV can be operated using only the remote control.
Use this function to prevent children from operating the TV without parental consent.

1 Press MENU ▲/▼ to display the "MENU 2" menu, then select "CHILD LOCK".



2 Press MENU –/+ to select "ON".

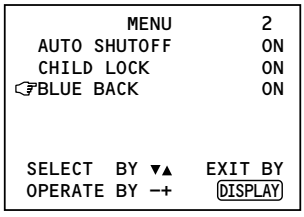
To cancel the CHILD LOCK function, select "OFF".

- The CHILD LOCK function is canceled when you turn the power off.

BLUE BACK

You can mute the sound and change the picture into a blue screen while no signals are received by the TV, or when the signals are unstable.

1 Press MENU ▲/▼ to display the "MENU 2" menu, then select "BLUE BACK".



2 Press MENU –/+ to select "ON".

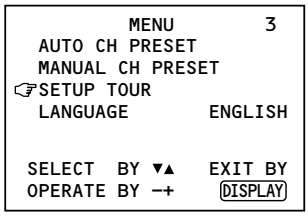
To cancel the BLUE BACK function, select "OFF".

- To view a broadcast even when the reception signal is poor, set the BLUE BACK function to "OFF".
- Even when the BLUE BACK function is set to "OFF", the sound may not be audible.

SETUP TOUR

You can start the SETUP TOUR function.

1 Press MENU ▲/▼ to display the "MENU 3" menu, then select "SETUP TOUR".



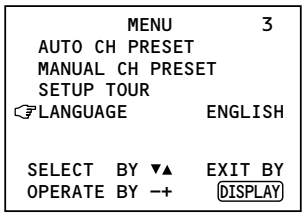
2 Press MENU –/+.

JVC logo is appear and the SETUP TOUR function will start.
For details, see page 6.

LANGUAGE

You can select the language for the on-screen display.

1 Press MENU ▲/▼ to display the "MENU 3" menu, then select "LANGUAGE".



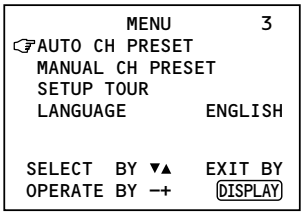
2 Press MENU –/+ to select language.

The on-screen display indications are in the selected language.

AUTO CH PRESET

You can automatically preset all TV channels that can be received by your TV to channels.

1 Press MENU ▲/▼ to display the "MENU 3" menu, then select "AUTO CH PRESET".



2 Press MENU –/+ to start the AUTO CH PRESET function.

" >>> ON SEARCH" is displayed on the screen.

When all the TV channels that can be received on your TV have been preset, the display goes out and the AUTO CH PRESET function operation is completed.

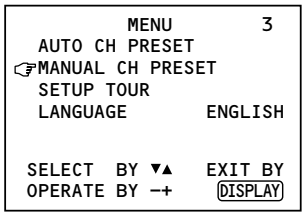
To stop the AUTO CH PRESET:
Press the MENU –/+ buttons.

- The AUTO CH PRESET function does not preset a TV channel to the AV channel (channel number 0).
- If the TV cannot preset the TV channel you want to view, preset it manually. For details, see "MANUAL CH PRESET" on page 14.

MANUAL CH PRESET

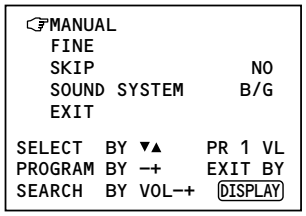
You can manually preset desired TV channels to desired channels.

1 Press MENU ▲/▼ to display the "MENU 3" menu, then select "MANUAL CH PRESET".



2 Press MENU –/+.

The sub-menu is displayed.



- The channel number is displayed as a PR number. For example, channel 1 will be displayed as PR 1. However, the AV channel will be displayed as AV.

3 Press MENU –/+ to select the channel number.

4 Press VOLUME –/+ to start searching for the TV channel.

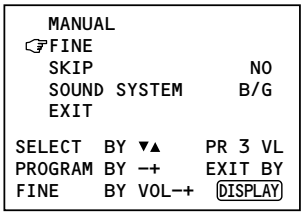
" >>> " or " <<< " is displayed on the screen.

When the TV finds a TV channel, the " >>> " or " <<< " display goes out, and the TV channel is preset to the currently selected channel number.

- If the TV channel you want to preset is not displayed, repeat step 4 until the TV finds the TV channel you want to preset.
- To stop the MANUAL CH PRESET function, press any button other than the VOLUME –/+ button.

If the picture is not clear:
Fine-tune the TV channel.

1 Press MENU ▲/▼ to select "FINE".

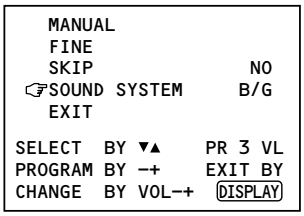


2 Hold VOLUME –/+ down to fine-tune the TV channel so that the best image is displayed on screen.

" > " or " < " indicates that the TV is fine-tuning the TV channel.

If the sound is not clear:

1 Press MENU ▲/▼ to select "SOUND SYSTEM".



2 Press VOLUME –/+ to select the appropriate sound system.

5 Press MENU ▲/▼ to select "MANUAL".

6 Repeat steps 3 to 5 if you want to preset another TV channel to a channel.

SKIP

You can set undesired channels to be skipped. Channels set to be skipped cannot be selected by the CHANNEL –/+ buttons nor the CHANNEL SCAN button.

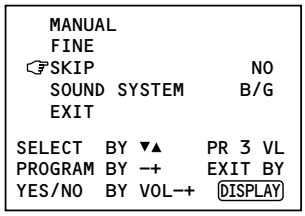
- Channels to which TV channels have not been preset are automatically set to be skipped.

1 Press MENU ▲/▼ to display the "MENU 3" menu, then select "MANUAL CH PRESET".

2 Press MENU –/+.

The sub-menu is displayed.

3 Press MENU ▲/▼ to select "SKIP".



4 Press MENU –/+ to select the channel you want to skip.

5 Press VOLUME –/+ to select "YES".

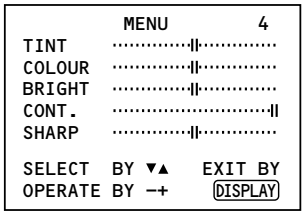
The channel is set to be skipped.
To cancel the SKIP function, select "NO".

6 Repeat steps 4 and 5 if you want to set another channel to skip.

Picture Adjustments

You can adjust the picture as you like.

1 Press MENU ▲/▼ to display the "MENU 4" menu.



2 Press MENU ▲/▼ to select an item and press MENU –/+ to adjust it.

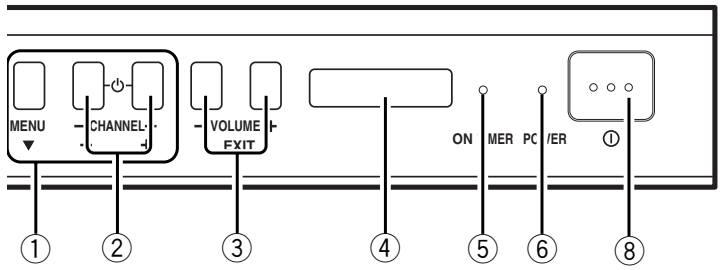
TINT*	- : Reddish	+ : Greenish
COLOUR	- : Lighter	+ : Deeper
BRIGHT	- : Darker	+ : Brighter
CONT.	- : Lower	+ : Higher
SHARP	- : Softer	+ : Sharper

* TINT (tint) is displayed only when viewing images from NTSC3.58 or NTSC4.43 colour systems.

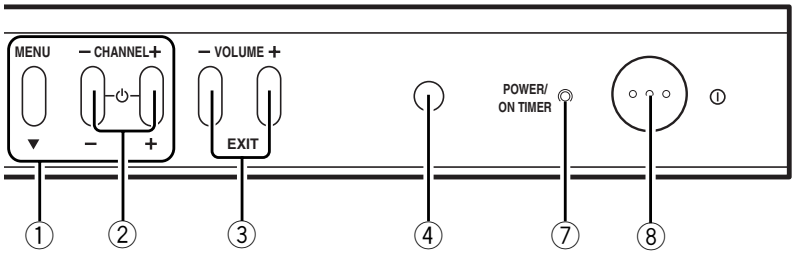
Using the buttons on the TV

The following illustrations are of only some models are shown for explanation purpose only. You TV may not be exactly the same as illustrated.

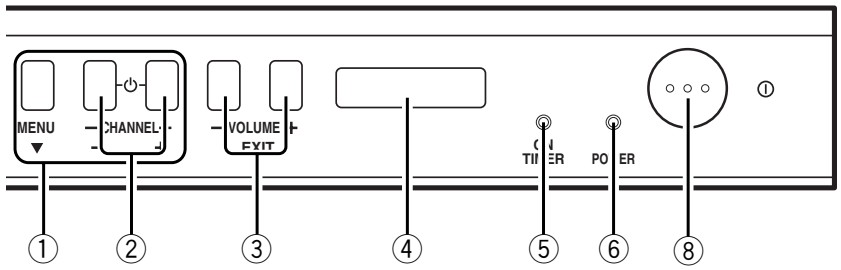
<AV-14F116>



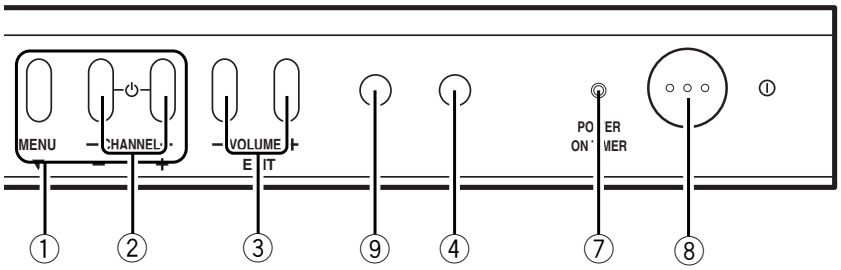
<AV-21C116>



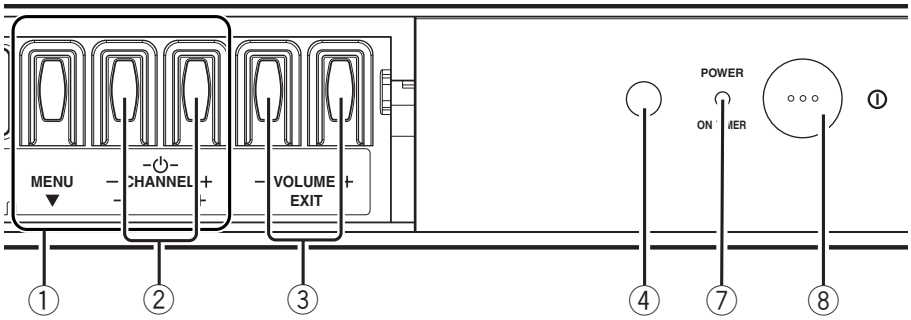
<AV-21D116>



<AV-21V116>



<AV-21B116>



① MENU button
- MENU ▼ button

② CHANNEL –/+ buttons
- MENU –/+ buttons

③ VOLUME –/+ buttons
- EXIT from MENU buttons

④ Remote control sensor

⑤ ON TIMER lamp
The light is switched on while ON TIMER function is operating.

⑥ POWER lamp
When the Main power is on, the light is red.

⑦ POWER/ON TIMER lamp
When the Main power is on, the light is green.
When ON TIMER function is on, it is red.

⑧ Main power button

⑨ Not application

Basic operation

• Check to make sure the CHILD LOCK function is set to “OFF”. When the CHILD LOCK function is set to “ON”, the TV cannot be operated using the front control buttons. For details, see “CHILD LOCK” on page 12.

1 Press CHANNEL –/+ to turn the TV on from standby mode.

2 Press CHANNEL –/+ to select a channel.

3 Press VOLUME –/+ to adjust the volume.

4 To turn your TV off, press the Main power button to turn off the TV’s main power.

To change the TV mode to the VIDEO mode:

• Select the VIDEO mode with the INPUT function in “MENU 1”.

Operating menus

You can operate functions in menus using the front control buttons on the TV.

1 Press MENU ▼ to display a menu.

2 Press MENU ▼ repeatedly to display the menu you want to use.

3 Press MENU ▼ to select the desired function or item.

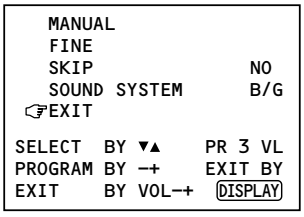
4 Press MENU –/+ or VOLUME –/+ to carry out the desired operation.

For details, see the description for each function.

5 Press VOLUME –/+ to turn the menu display off.

To turn the sub-menu display off:

1 Press MENU ▼ to select “EXIT”.



2 Press VOLUME –/+ to turn the display off.

Troubleshooting

If there is no picture or the TV does not operate normally, make sure the problem isn't due to the reasons indicated below.
If the problem persists even after taking the measures indicated, please contact a service technician.

Cannot turn the TV on

- Press the Main power button on the TV.
- Connect the power cord to the AC outlet.

The screen turns blue

- Is the BLUE BACK function on? (see page 12.)

Remote control inoperable

- Replace the batteries. (see page 3.)

Buttons on front of the TV do not work

- Switch the CHILD LOCK function off. (see page 12.)

TV does not respond immediately

- Press the main power button on the TV to turn off the main power. Press the main power button again to turn on the TV. If the TV returns to a normal state, operation is normal.

The TV turns off suddenly

- Is the OFF TIMER function set to operate? (see page 9.)
- Is the AUTO SHUTOFF function on? (see page 12.)
- Have you not performed an operation for about two hours after the TV was switched on by the ON TIMER function? (see page 11.) If you don't perform an operation within about two hours, the TV is automatically switched off for safety.

Poor sound

- Press the SOUND SYSTEM button to select another sound system. (see page 8.)

Poor picture

- Press the COLOUR SYSTEM button to select another colour system. (see page 8.)
- Adjust the picture settings. (see page 15.)
- Set the Picture mode to STANDARD. (see page 8.)
- If noise (snow) totally blocks out the picture, check the following.
  - Have the TV and aerial been connected properly?
  - Has the aerial cable been damaged?
  - Is the aerial pointing in the right direction?
  - Is the aerial itself faulty?
- If the TV or aerial suffer interference from other equipment, stripes or noise may appear in the picture. Move any equipment which can cause interference away from the TV.
- If the TV or aerial suffer interference from signals reflecting from mountains or buildings, double-pictures (ghosting) will occur. Change the aerial's direction or replace it with an aerial with better directionality.
- When a white and bright still image (such as a white dress) is displayed on the screen, the white part may look as if it is coloured. When the image disappears from the screen, the unnatural colours will also disappear.

The TV turns on suddenly

- Is the ON TIMER function set to operate? (see page 11.)

The TV channel changes suddenly

- Is the ON TIMER function set to operate? (see page 11.)

Specifications

MODEL		AV-14F116	AV-21B116	AV-21C116	AV-21D116	AV-21V116
TV RF systems		B/G , I , D/K				
Colour systems	RF MODE	PAL, SECAM				
	VIDEO MODE	PAL, SECAM, NTSC 3.58 MHz, NTSC 4.43 MHz				
Channel and frequencies		VHF low channel (VL) = 46.25 to 168.25 MHz VHF high channel (VH) = 175.25 to 463.25 MHz UHF channel (U) = 471.25 to 863.25 MHz *Receives cable channels in mid band (X to Z, S1 to S10), super band (S11 to S20) and hyper band (S21 to S41)				
Power input		AC 220 to 240 V, 50/60 Hz (operating AC 90 to 260 V, 50/60 Hz)				
Power consumption		MAX 68 W	MAX 100 W	MAX 100 W	MAX 90 W	MAX 100 W
		AVG 47 W	AVG 65 W	AVG 65 W	AVG 60 W	AVG 65 W
Screen size (measured diagonally)		Picture tube 368.4 mm Visible area 335.4 mm	Picture tube 546.9 mm Visible area 508 mm	Picture tube 546.9 mm Visible area 508 mm	Picture tube 546.9 mm Visible area 508 mm	Picture tube 546.9 mm Visible area 508 mm
Audio output (Rated power output)		3W	3W	3W	3W	3W
Speakers		(5 x 9) cm x 2	(5 x 9) cm x 2	(5 x 9) cm x 1	(5 x 12) cm x 2	(6.5 x 13) cm x 2
External input / output		INPUT : VIDEO input (RCA), AUDIO input (RCA) OUTPUT : VIDEO output (RCA), AUDIO output (RCA) Headphone jack : stereo mini jack (3.5 mm diameter, sound is monaural)				
Dimension (W x H x D) (mm)		462 x 340.5 x 375 mm	598 x 476 x476.7 mm	502 x 476.5 x 471.6 mm	598 x 468 x 478 mm	649 x 465.5 x 473.5 mm
Weight		10 kg	21 kg	22 kg	21 kg	22 kg
Accessories		- Remote control unit : RM-C1121 x 1 - AA/R6/UW-3 dry cell battery x 2 - Matching aerial adapter x 1 - Rod aerial x 1	- Remote control unit : RM-C1121 x 1 - AA/R6/UW-3 dry cell battery x 2 - Matching aerial adapter x 1	- Remote control unit : RM-C1121 x 1 - AA/R6/UW-3 dry cell battery x 2 - Matching aerial adapter x 1	- Remote control unit : RM-C1121x 1 - AA/R6/UW-3 dry cell battery x 2 - Matching aerial adapter x 1	- Remote control unit : RM-C1121 x 1 - AA/R6/UW-3 dry cell battery x 2 - Matching aerial adapter x 1

Design and specifications subject to change without notice.

JVC

JVC

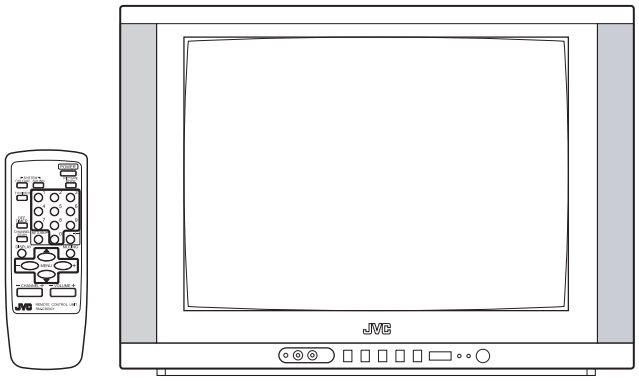
SCHEMATIC DIAGRAMS

COLOUR TELEVISION

AV-21D116/B

CD-ROM No.SML200607

BASIC CHASSIS
CG4



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No.YA396
2006/7

AV-21D116/B

STANDARD CIRCUIT DIAGRAM

■ NOTE ON USING CIRCUIT DIAGRAMS

1.SAFETY

The components identified by the ⚠ symbol and shading are critical for safety. For continued safety replace safety ciritical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

(1)Input signal	: Colour bar signal
(2)Setting positions of each knob/button and variable resistor	: Original setting position when shipped
(3)Internal resistance of tester	: DC 20kΩ/V
(4)Oscilloscope sweeping time	: H ⇒ 20μs / div
	: V ⇒ 5ms / div
	: Othters ⇒ Sweeping time is specified
(5)Voltage values	: All DC voltage values

∗ Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL [EXAMPLE]

● In the PW board : R1209 → R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

● Resistance value

No unit	: [Ω]
K	: [kΩ]
M	: [MΩ]

● Rated allowable power

No indication	: 1/16 [W]
Others	: As specified

● Type

No indication	: Carbon resistor
OMR	: Oxide metal film resistor
MFR	: Metal film resistor
MPR	: Metal plate resistor
UNFR	: Uninflammable resistor
FR	: Fusible resistor

∗ Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

● Capacitance value

1 or higher	: [pF]
less than 1	: [μF]

● Withstand voltage

No indication	: DC50[V]
Others	: DC withstand voltage [V]
AC indicated	: AC withstand voltage [V]

∗ Electrolytic Capacitors

47/50[Example]: Capacitance value [μF]/withstand voltage[V]

● Type

No indication	: Ceramic capacitor
MM	: Metalized mylar capacitor
PP	: Polypropylene capacitor
MPP	: Metalized polypropylene capacitor
MF	: Metalized film capacitor
TF	: Thin film capacitor
BP	: Bipolar electrolytic capacitor
TAN	: Tantalum capacitor

(3)Coils

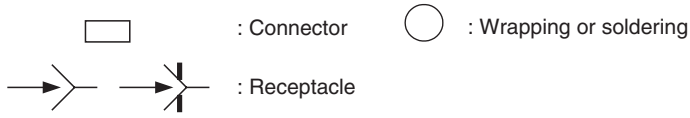
No unit	: [μH]
Others	: As specified

(4)Power Supply

∗ Respective voltage values are indicated

(5)Test point

(6)Connecting method



(7)Ground symbol

5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND and the ISOLATED(NEUTRAL) : (⏚) side GND. Therefore, care must be taken for the following points.

(1)Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. if the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.

(2)Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected, a fuse or any parts will be broken.

◆ **Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.**

NOTE

◆ **Due improvement in performance, some part numbers show in the circuit diagram may not agree with those indicated in the part list.**
When ordering parts, please use the numbers that appear in the Parts List.

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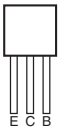
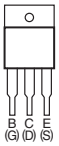
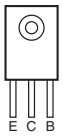
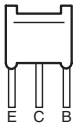
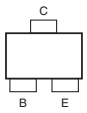
WAVEFORMS 2-12

USING P.W. BOARD

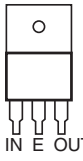
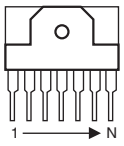
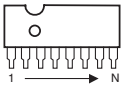
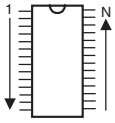
PWB ASS'Y name	AV-21D116/B
MAIN P.W. BOARD	SCG-1539A-BK

SEMICONDUCTOR SHAPES

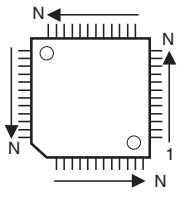
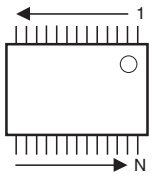
TRANSISTOR

BOTTOM VIEW	FRONT VIEW				TOP VIEW
					CHIP TR 

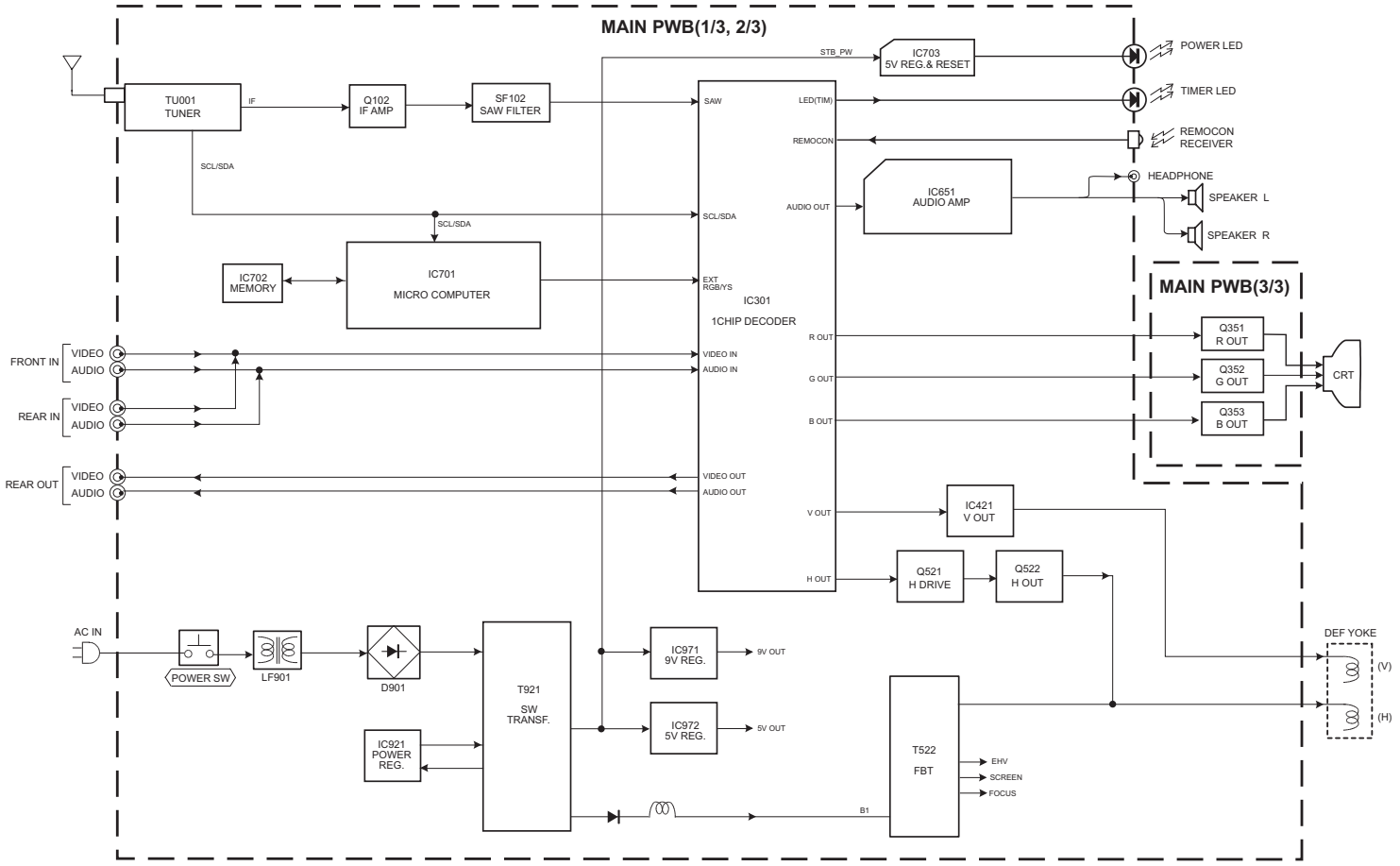
IC

BOTTOM VIEW	FRONT VIEW			TOP VIEW
				

CHIP IC

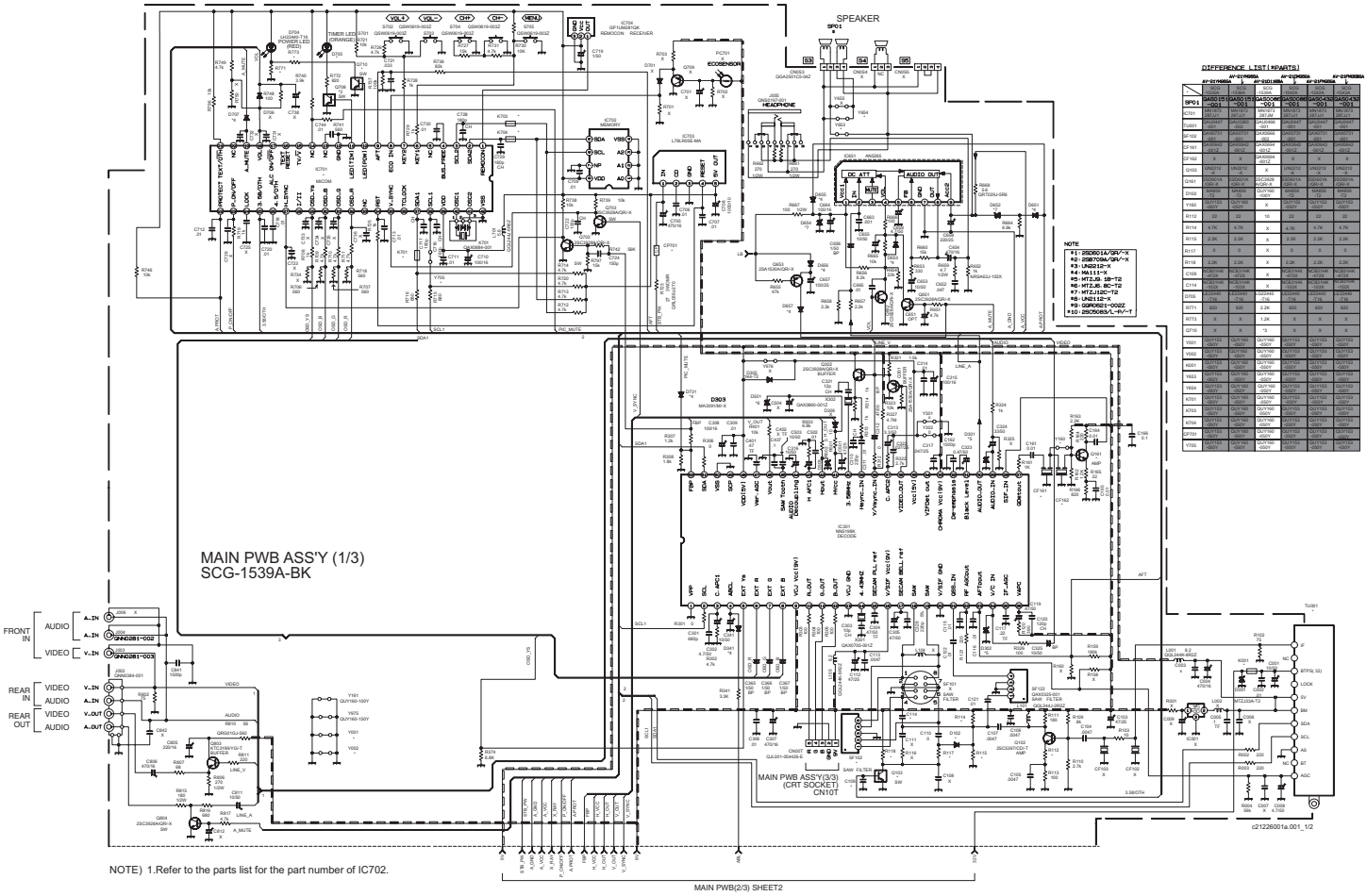
TOP VIEW		
		

BLOCK DIAGRAM



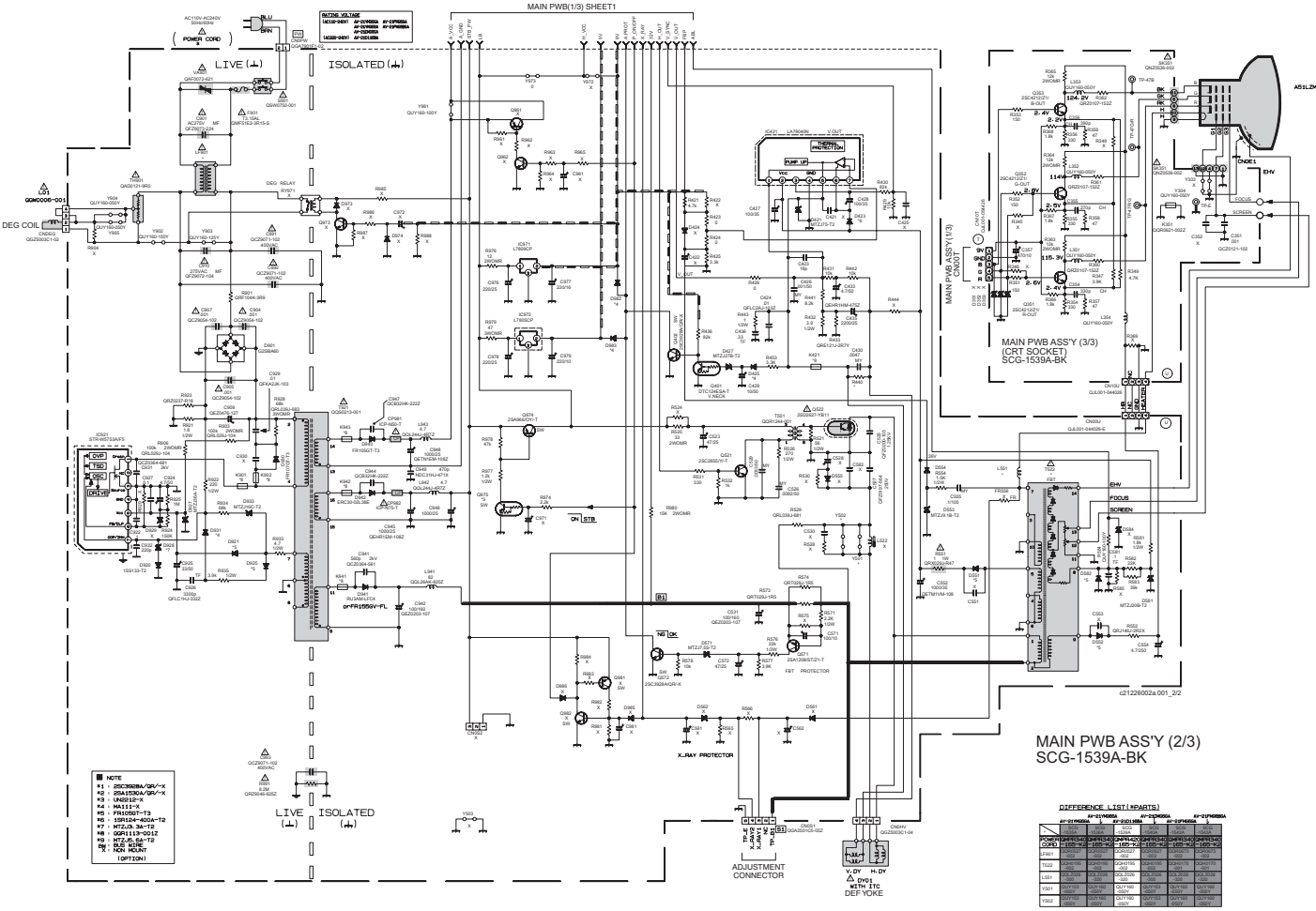
CIRCUIT DIAGRAMS

MAIN PWB CIRCUIT DIAGRAM (1/3) SHEET 1



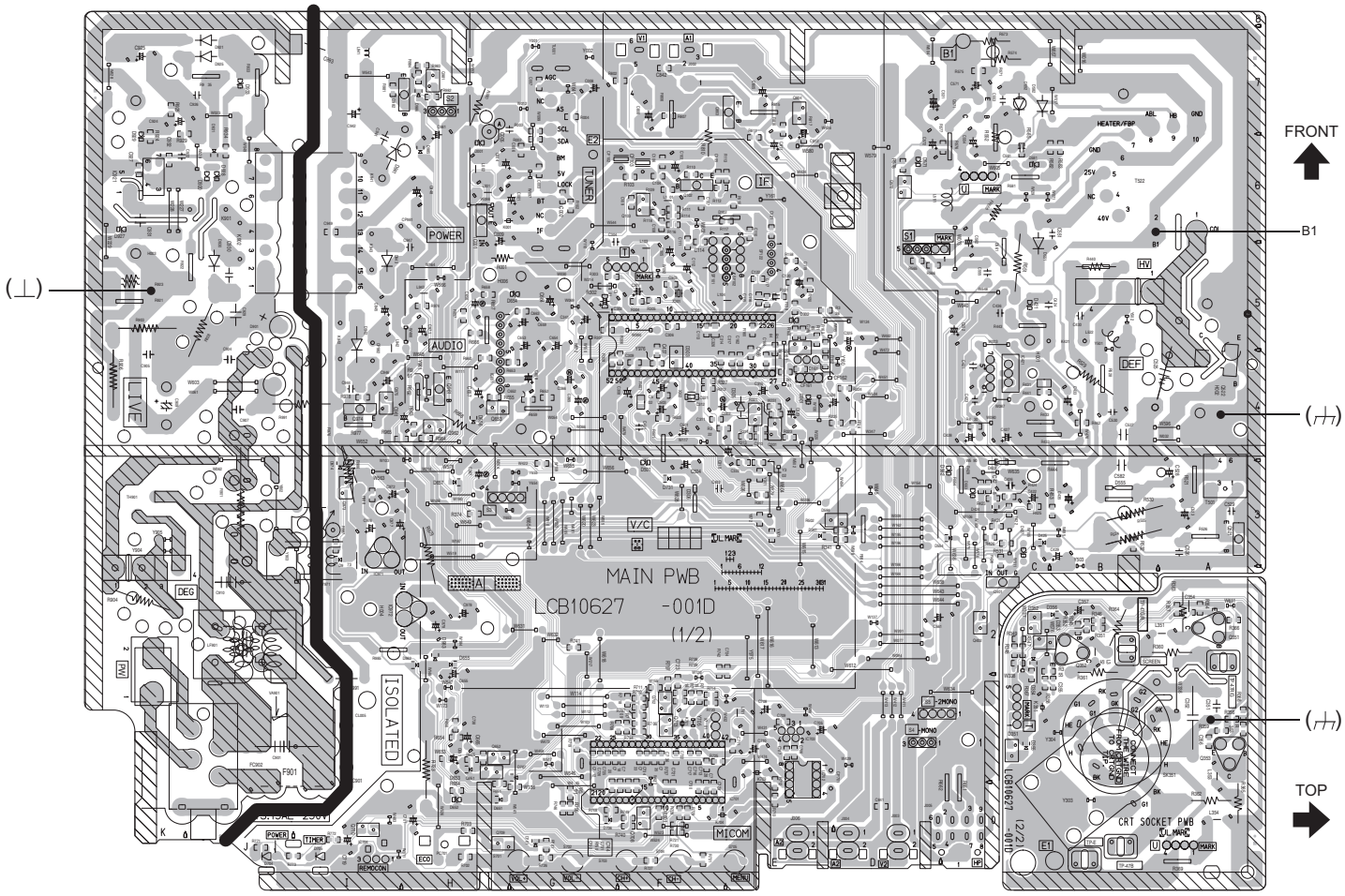
NOTE) 1.Refer to the parts list for the part number of IC702.

MAIN PWB CIRCUIT DIAGRAM (2/3),(3/3) SHEET 2



PATTERN DIAGRAMS

MAIN PWB PATTERN



VOLTAGE CHARTS

<MAIN PWB>

MODE PIN NO.	DC (V)
IC301	
1	0
2	4.4
3	6.3
4	3.4
5	0
6	5.0
7	5.0
8	5.5
9	9.0
10	3.0
11	3.0
12	3.0
13	0
14	2.8
15	4.2
16	9.0
17	3.8
18	2.8
19	2.8
20	0
21	0
22	0
23	4.4
24	3.2
25	3.0
26	3.5
27	4.2
28	3.7
29	4.1
30	3.9
31	4.2
32	4.2
33	9.0
34	4.0
35	4.7
36	4.0
37	6.1
38	4.2
39	4.3
40	2.7
41	6.2
42	1.0
43	3.7
44	3.9
45	1.2
46	3.1
47	5.4
48	5.0
49	0.7
50	0
51	4.4
52	0.7
IC421	
1	3.7
2	26.0
3	2.0
4	0
5	13.8
6	26.3
7	3.7
IC651	
1	12.5
2	5.6
3	0
4	2.4
5	9.4
6	9.6
7	0
8	9.7
9	19.9
IC701	
1	4.5
2	4.9
3	0
4	0
5	0
6	4.9
7	4.9
8	2.3
9	3.0
10	4.9
11	0
12	0
13	2.4
14	0.1
15	1.8
16	1.8
17	0
18	0.8
19	0
20	4.9
21	4.9
22	4.9
23	4.9
24	2.3
25	4.9

MODE PIN NO.	DC (V)
26	0
27	4.1
28	4.9
29	0
30	0
31	0
32	0
33	0
34	4.9
35	4.7
36	4.9
37	4.4
38	4.4
39	4.9
40	0
41	2.1
42	0
IC702	
1	0
2	0
3	0
4	0
5	4.9
6	4.9
7	0
8	4.9
IC703	
1	14.4
2	5.8
3	0
4	4.9
5	4.9
IC704	
1	4.5
2	4.9
3	0
IC921	
1	314.0
2	NC
3	0
4	0
5	31.8
6	0
7	0.7
IC971	
1	12.8
2	9.0
3	0
IC972	
1	9.2
2	4.9
3	0
Q102	
E	0
C	9.0
B	2.3
Q161	
E	2.5
C	8.3
B	3.2
Q301	
E	4.6
C	0
B	4.0
Q302	
E	4.0
C	9.0
B	4.6
Q401	
E	0
C	0
B	5.4
Q402	
E	0
C	4.9
B	0
Q521	
E	0
C	9.7
B	0.3
Q522	
E	0
C	115.3
B	0
Q571	
E	115.5
C	0
B	115.1
Q572	
E	0
C	4.9
B	0
Q651	
E	0
C	0.3
B	0

MODE PIN NO.	DC (V)
Q652	
E	0
C	1.0
B	0.6
Q653	
E	15.1
C	0
B	15.2
Q702	
E	0
C	4.2
B	0
Q703	
E	0
C	4.8
B	0.1
Q708	
E	0
C	2.0
B	0
Q710	
E	0
C	0.1
B	0
Q803	
E	0
C	8.1
B	4.7
Q804	
E	0
C	0
B	0.1
Q974	
E	15.3
C	15.1
B	0
Q975	
E	0
C	0.1
B	4.3
TU001	
1	4.6
2	NC
3	0
4	4.4
5	0
6	4.5
7	4.9
8	0
9	31.3
10	NC
11	0

<CRT SOCKET PWB>

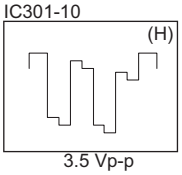
MODE PIN NO.	DC (V)
Q351	
E	2.5
C	125.8
B	3.2
Q352	
E	2.6
C	123.3
B	3.3
Q353	
E	2.5
C	128.5
B	3.2

WAVEFORMS

-MAIN PWB-

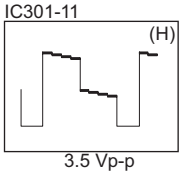
(SHEET1)

IC301-10



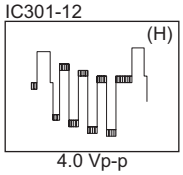
3.5 Vp-p

IC301-11



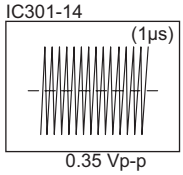
3.5 Vp-p

IC301-12



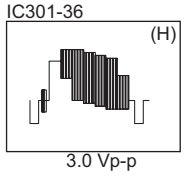
4.0 Vp-p

IC301-14



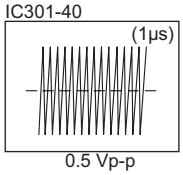
0.35 Vp-p

IC301-36



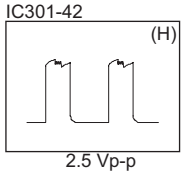
3.0 Vp-p

IC301-40



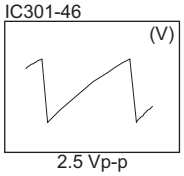
0.5 Vp-p

IC301-42



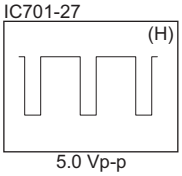
2.5 Vp-p

IC301-46



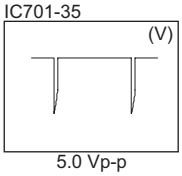
2.5 Vp-p

IC701-27



5.0 Vp-p

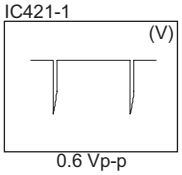
IC701-35



5.0 Vp-p

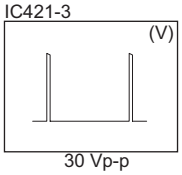
(SHEET2)

IC421-1



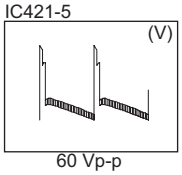
0.6 Vp-p

IC421-3



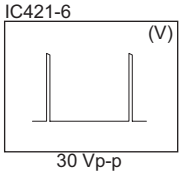
30 Vp-p

IC421-5



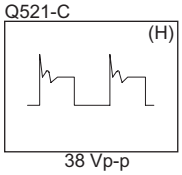
60 Vp-p

IC421-6



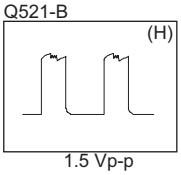
30 Vp-p

Q521-C



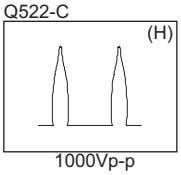
38 Vp-p

Q521-B



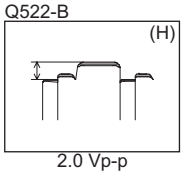
1.5 Vp-p

Q522-C



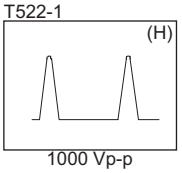
1000Vp-p

Q522-B



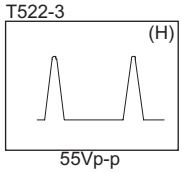
2.0 Vp-p

T522-1



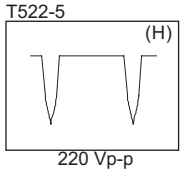
1000 Vp-p

T522-3



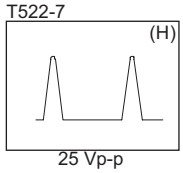
55Vp-p

T522-5



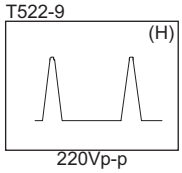
220 Vp-p

T522-7



25 Vp-p

T522-9

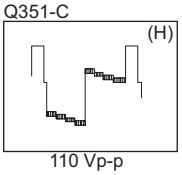


220Vp-p

-CRT SOCKET PWB-

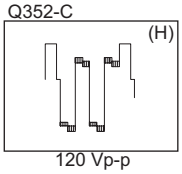
(SHEET2)

Q351-C



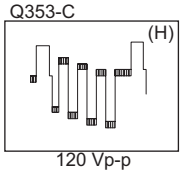
110 Vp-p

Q352-C



120 Vp-p

Q353-C



120 Vp-p

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(No.YA396)

Printed in Japan
VPT

PARTS LIST

CAUTION

- The parts identified by the ⚠ symbol are important for the safety . Whenever replacing these parts, be sure to use specified ones to secure the safety.
- The parts not indicated in this Parts List and those which are filled with lines --- in the Parts No. columns will not be supplied.
- P.W. BOARD Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied.

ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS	
CR	Carbon Resistor
FR	Fusible Resistor
PR	Plate Resistor
VR	Variable Resistor
HV R	High Voltage Resistor
MF R	Metal Film Resistor
MG R	Metal Glazed Resistor
MP R	Metal Plate Resistor
OM R	Metal Oxide Film Resistor
CMF R	Coating Metal Film Resistor
UNF R	Non-Flammable Resistor
CH V R	Chip Variable Resistor
CH MG R	Chip Metal Glazed Resistor
COMP. R	Composition Resistor
LPTC R	Linear Positive Temperature Coefficient Resistor

CAPACITORS	
C CAP.	Ceramic Capacitor
E CAP.	Electrolytic Capacitor
M CAP.	Mylar Capacitor
CH CAP.	Chip Capacitor
HV CAP.	High Voltage Capacitor
MF CAP.	Metalized Film Capacitor
MM CAP.	Metalized Mylar Capacitor
MP CAP.	Metalized Polystyrol Capacitor
PP CAP.	Polypropylene Capacitor
PS CAP.	Polystyrol Capacitor
TF CAP.	Thin Film Capacitor
MPP CAP.	Metalized Polypropylene Capacitor
TAN. CAP.	Tantalum Capacitor
CH C CAP.	Chip Ceramic Capacitor
BP E CAP.	Bi-Polar Electrolytic Capacitor
CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

RESISTORS									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% -10%	+50% -10%	+80% -20%	+100% -0%

CONTENTS

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PACKING PARTS LIST 3-8

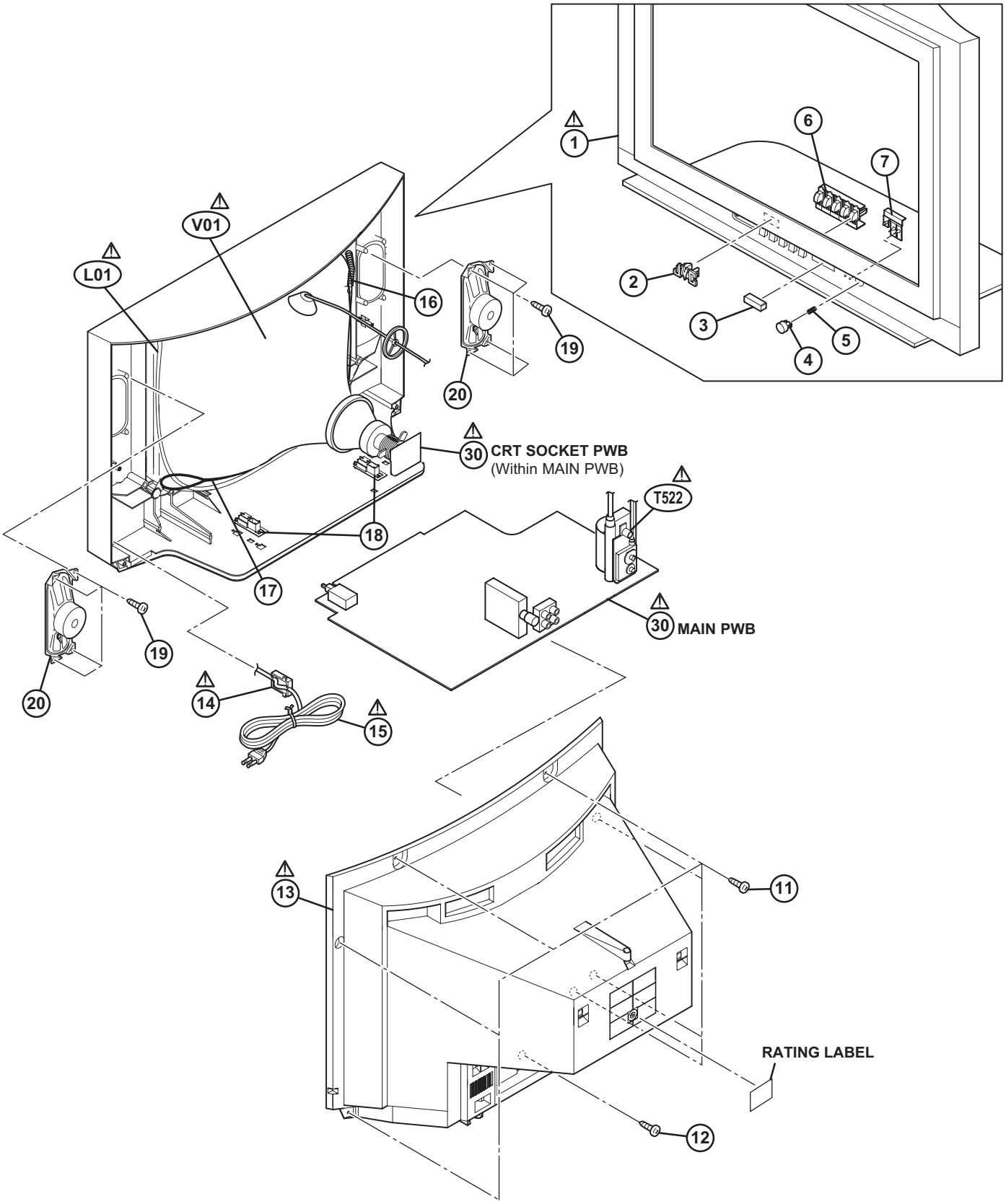
USING P.W. BOARD & REMOTE CONTROL UNIT

P.W.B ASS'Y	AV-21D116/B
MAIN P.W.B	SCG-1539A-BK
REMOTE CONTROL UNIT	RM-C1121-1H

EXPLODED VIEW PARTS LIST -1

⚠	Ref.No.	Part No.	Part Name	Description	Local
⚠	V01	A51LZM10X06AN25	PICTURE TUBE(ITC)	Inc.DEF YOKE, PC MAGNET	
⚠	L01	QQW0006-001	DEG COIL		
⚠	T522	QQH0195-002	FB TRANSF		
⚠	1	LC11129-037A-H	FRONT CABINET		
	2	GG40023-001A-H	JVC MARK		
	3	GG30020-001A-H	E.E.WINDOW		
	4	GG30019-003A-H	POWER KNOB		
	5	CM35235-003-H	SPRING		
	6	GG20006-003A-H	CONTROL KNOB		
	7	GG30021-002A-H	LED LENS		
	11	QYSBSFG4016ZA	TAP SCREW	M4 x 16mm(x7)	
	12	QYSBSF3010ZA	TAP SCREW	M3 x 10mm	
⚠	13	GG10130-019B-H	REAR COVER		
⚠	14	CM47005-A01-H	POWER CORD CLAMP		
⚠	15	QMPR420-165-K2	POWER CORD	1.65m BLACK	
	16	A48457-3-H	SPRING		
	17	WJY0008-006A-E	BRAIDED ASS'Y		
	18	CM36623-003-H	CHASSIS RAIL	(x2)	
	19	QYSBSF4012ZA	TAP SCREW	M4 x 12mm(x8)	
	20	QAS0086-001	SPEAKER	(x2) SP01,SP02	
⚠	30	SCG-1539A-BK	MAIN PWB		

EXPLODED VIEW -1



PRINTED WIRING BOARD PARTS LIST

MAIN P.W. BOARD ASS'Y (SCG-1539A-BK)

⚠Ref No.	Part No.	Part Name	Description	Local
IC301	NN5198K	IC		
IC421	LA78040N	IC		
IC651	AN5265	IC		
IC701	MN1873287JM	IC		
IC702	ATE08-21YMG6	IC	(SERVICE)	
IC703	L78LR05E-MA	IC		
IC704	GP1UM281QK	IR DETECT UNIT	38kHz	
IC921	STR-W5753A/F5	IC		
IC971	L7809CP	IC		
IC972	L7805CP	IC		
Q102	2SC5397/CD/-T	TRANSISTOR		
Q161	2SC3928A/QR/-X	TRANSISTOR		
Q301	2SA1530A/QR/-X	TRANSISTOR		
Q302	2SC3928A/QR/-X	TRANSISTOR		
Q351	2SC4212/Z1/	TRANSISTOR		
Q352	2SC4212/Z1/	TRANSISTOR		
Q353	2SC4212/Z1/	TRANSISTOR		
Q401	DTC124ESA-T	DIGI TRANSISTOR		
Q402	2SC3928A/QR/-X	TRANSISTOR		
Q521	2SC2655/Y/-T	TRANSISTOR		
⚠Q522	2SD2627-YB11	POW TRANSISTOR		
Q571	2SA1208/ST/Z1-T	TRANSISTOR		
Q572	2SC3928A/QR/-X	TRANSISTOR		
Q651	2SC3928A/QR/-X	TRANSISTOR		
Q652	2SC3928A/QR/-X	TRANSISTOR		
Q653	2SA1530A/QR/-X	TRANSISTOR		
Q702	2SC3928A/QR/-X	TRANSISTOR		
Q703	2SC3928A/QR/-X	TRANSISTOR		
Q708	UN2212-X	DIGI TRANSISTOR		
Q710	UN2212-X	DIGI TRANSISTOR		
Q803	KTC3199/YG/-T	TRANSISTOR		
Q804	2SC3928A/QR/-X	TRANSISTOR		
Q974	2SA966/OY/-T	TRANSISTOR		
Q975	UN2212-X	DIGI TRANSISTOR		
D001	MTZJ33A-T2	Z DIODE		
D301	MTZJ9.1B-T2	Z DIODE		
D302	MTZJ9.1B-T2	Z DIODE		
D303	MA3091/M/-X	Z DIODE		
D305	1K4-T2	SB DIODE		
D306	QRE121J-561Y	C RESISTOR	560Ω 1/2W J	
D306 or	QRE122J-561	C RESISTOR	560Ω 1/2W J	
D306 or	QRG01GJ-561	OMF RESISTOR	560Ω 1W J	
D341	MA111-X	SI DIODE		
D421	MTZJ75-T2	Z DIODE		
D423	1SR124-400A-T2	SI DIODE		
D425	MA111-X	SI DIODE		
D427	MTZJ27B-T2	Z DIODE		
D501	MTZJ6.8C-T2	Z DIODE		
D551	FR105GT-T3	SI DIODE		
D552	FR105GT-T3	SI DIODE		
D553	MTZJ9.1B-T2	Z DIODE		
D554	MA111-X	SI DIODE		
D571	MTZJ7.5S-T2	Z DIODE		
D581	MTZJ20B-T2	Z DIODE		
D582	FR105GT-T3	SI DIODE		
D651	MA111-X	SI DIODE		
D652	MTZJ12C-T2	Z DIODE		
D653	MA111-X	SI DIODE		
D654	MTZJ12C-T2	Z DIODE		
D655	MA111-X	SI DIODE		
D656	MA111-X	SI DIODE		
D657	MA111-X	SI DIODE		
D704	LH22440-T16	LED	POWER(RED)	
D705	LG22440-T16	LED	ON TIMER(GREEN)	
D707	MA111-X	SI DIODE		
D731	MA111-X	SI DIODE		
D901	G2SBA60	BRIDGE DIODE		
D920	1SS133-T2	SI DIODE		
D921	FR105GT-T3	SI DIODE		
D925	FR105GT-T3	SI DIODE		
D927	MTZJ36A-T2	Z DIODE		
D928	MTZJ3.3A-T2	Z DIODE		
D930	FR107GT-T3	SI DIODE		
D931	MA111-X	SI DIODE		
D933	MTZJ16C-T2	Z DIODE		
D941	RU3AM-LFC4	SI DIODE		
D942	ERC30-02L38E	SI DIODE		
D943	FR105GT-T3	SI DIODE		
D982	MA111-X	SI DIODE		
D983	MA111-X	SI DIODE		

⚠Ref No.	Part No.	Part Name	Description	Local
C001	QETN1HM-106Z	E CAPACITOR	10uF 50V M	
C002	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C004	QETN1CM-477Z	E CAPACITOR	470uF 16V M	
C005	QFVF1HJ-104Z	MF CAPACITOR	0.1uF 50V J	
C008	QETN1HM-475Z	E CAPACITOR	4.7uF 50V M	
C103	QETN1EM-476Z	E CAPACITOR	47uF 25V M	
C104	NCB31HK-472X	C CAPACITOR	4700pF 50V K	
C105	NCB31HK-472X	C CAPACITOR	4700pF 50V K	
C106	NCB31HK-472X	C CAPACITOR	4700pF 50V K	
C107	NCB31HK-472X	C CAPACITOR	4700pF 50V K	
C110	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C112	QETN1EM-476Z	E CAPACITOR	47uF 25V M	
C113	NCB31HK-472X	C CAPACITOR	4700pF 50V K	
C115	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C116	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C117	QFVF1HJ-224Z	MF CAPACITOR	0.22uF 50V J	
C119	QETN1HM-474Z	E CAPACITOR	0.47uF 50V M	
C120	NDC31HJ-121X	C CAPACITOR	120pF 50V J	
C121	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C122	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C161	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C162	NCB31HK-152X	C CAPACITOR	1500pF 50V K	
C164	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C165	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C166	NCB31HK-104X	C CAPACITOR	0.1uF 50V K	
C301	NCB31HK-123X	C CAPACITOR	0.012pF 50V K	
C302	QETN1HM-475Z	E CAPACITOR	4.7uF 50V M	
C303	NDC31HJ-100X	C CAPACITOR	10pF 50V J	
C304	QFVF1HJ-474Z	MF CAPACITOR	0.47uF 50V J	
C305	QETN1HM-474Z	E CAPACITOR	0.47uF 50V M	
C306	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C307	QETN1CM-477Z	E CAPACITOR	470uF 16V M	
C308	QETN1CM-107Z	E CAPACITOR	100uF 16V M	
C309	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C310	NDC31HJ-221X	C CAPACITOR	220pF 50V J	
C311	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C312	QENC1HM-474Z	BP E CAPACITOR	0.47uF 50V M	
C313	QETN1HM-335Z	E CAPACITOR	3.3uF 50V M	
C314	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C315	QETN1CM-107Z	E CAPACITOR	100uF 16V M	
C316	QETN1HM-106Z	E CAPACITOR	10uF 50V M	
C317	NCB31EK-473X	C CAPACITOR	0.047uF 25V K	
C321	NDC31HJ-120X	C CAPACITOR	12pF 50V J	
C322	NCB31EK-273X	C CAPACITOR	0.027uF 25V K	
C323	QETN1HM-474Z	E CAPACITOR	0.47uF 50V M	
C324	QETN1HM-336Z	E CAPACITOR	33uF 50V M	
C325	QENC1HM-106Z	BP E CAPACITOR	10uF 50V M	
C326	NCS21HJ-221X	C CAPACITOR	220pF 50V J	
C341	QETN1HM-106Z	E CAPACITOR	10uF 50V M	
C351	QCZ0121-102	C CAPACITOR	1000pF 3KV Z	
C354	NDC31HJ-331X	C CAPACITOR	330pF 50V J	
C355	NDC31HJ-271X	C CAPACITOR	270pF 50V J	
C356	NDC31HJ-391X	C CAPACITOR	390pF 50V J	
C357	QETN1AM-477Z	E CAPACITOR	470uF 10V M	
C365	QENC1HM-105Z	BP E CAPACITOR	1uF 50V M	
C366	QENC1HM-105Z	BP E CAPACITOR	1uF 50V M	
C367	QENC1HM-105Z	BP E CAPACITOR	1uF 50V M	
C401	QFVF1HJ-474Z	MF CAPACITOR	0.47uF 50V J	
C423	QCS32HJ-180Z	C CAPACITOR	18pF 500V J	
C424	QFLC2AJ-103Z	M CAPACITOR	0.01uF 100V J	
C426	QFLC1HJ-102Z	M CAPACITOR	1000pF 50V J	
C427	QETN1VM-107Z	E CAPACITOR	100uF 35V M	
C428	QETN1VM-107Z	E CAPACITOR	100uF 35V M	
C429	QETN1HM-106Z	E CAPACITOR	10uF 50V M	
C430	QFN32AJ-472Z	M CAPACITOR	4700pF 100V J	
C433	QEHR1HM-475Z	E CAPACITOR	4.7uF 50V M	
C435	QETM1EM-228	E CAPACITOR	2200uF 25V M	
C436	QFVF1HJ-334Z	MF CAPACITOR	0.33uF 50V J	
C437	NCB31HK-104X	C CAPACITOR	0.1uF 50V K	
C501	QETN1EM-476Z	E CAPACITOR	47uF 25V M	
C502	NCB31HK-103X	C CAPACITOR	0.01uF 50V K	
C503	QETN1HM-106Z	E CAPACITOR	10uF 50V M	
C523	QETN1EM-476Z	E CAPACITOR	47uF 25V M	
C525	QFZ0200-103	MPP CAPACITOR	0.01uF 1.5kV H	
C526	QFLC1HJ-822Z	M CAPACITOR	8200pF 50V J	
C527	QFZ0197-564	MPP CAPACITOR	0.56uF 250V J	
C529	QFLC1HJ-332Z	M CAPACITOR	3300pF 50V J	
C531	QEZ0203-107	E CAPACITOR	100uF 160V M	
C552	QETM1VM-108	E CAPACITOR	1000uF 35V M	
C554	QETN2EM-475Z	E CAPACITOR	4.7uF 250V M	
C555	QFLC2AJ-104Z	M CAPACITOR	0.1uF 100V J	
C571	QETN1AM-107Z	E CAPACITOR	100uF 10V M	
C572	QETN1EM-476Z	E CAPACITOR	47uF 25V M	
C581	QFVF1HJ-104Z	MF CAPACITOR	0.1uF 50V J	

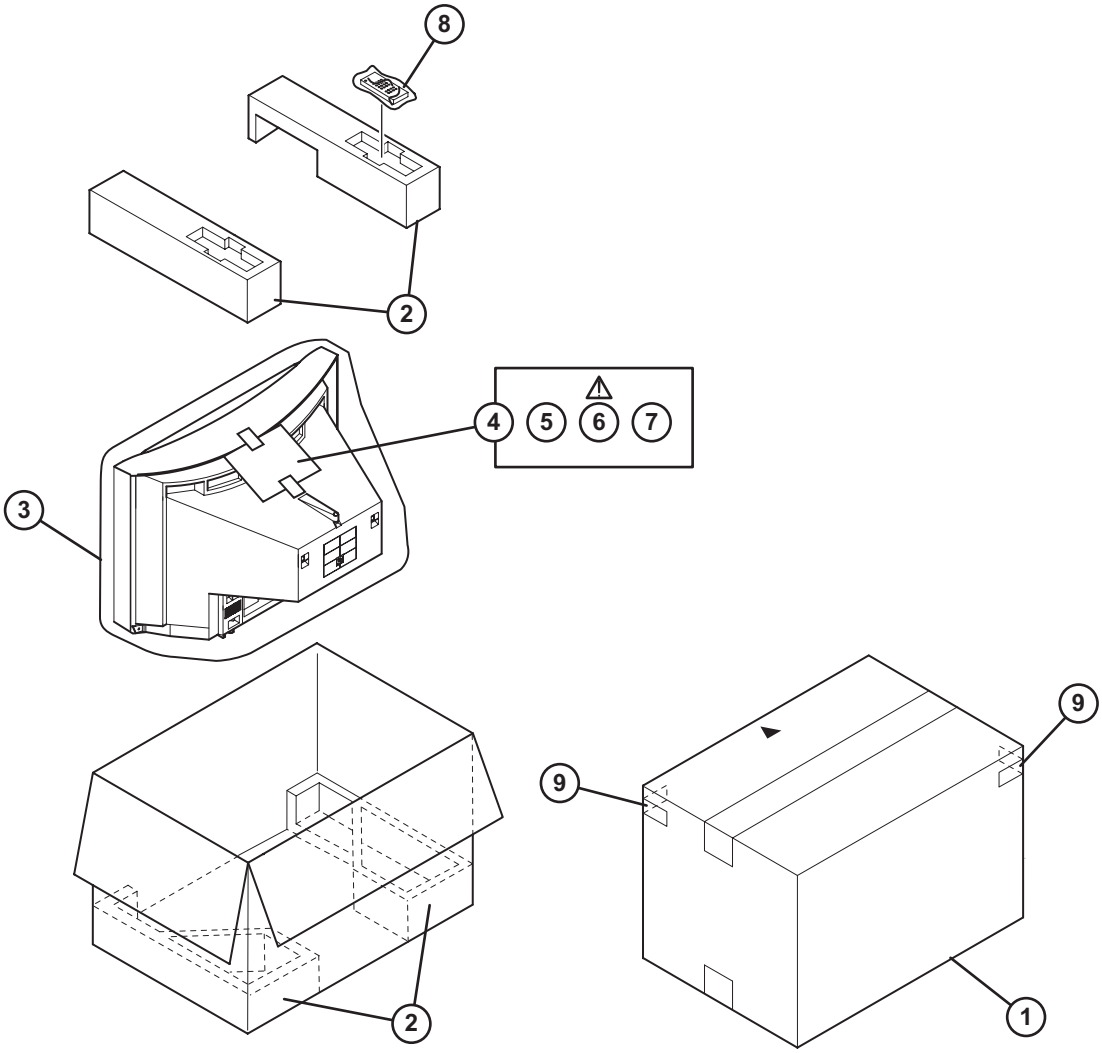
⚠Ref No.	Part No.	Part Name	Description Local
C652	NCB31HK-473X	C CAPACITOR	0.047uF 50V K
C653	QETN1HM-106Z	E CAPACITOR	10uF 50V M
C654	QETN1CM-477Z	E CAPACITOR	470uF 16V M
C655	QETN1HM-106Z	E CAPACITOR	10uF 50V M
C656	QENC1HM-105Z	BP E CAPACITOR	1uF 50V M
C657	QETN1EM-107Z	E CAPACITOR	100uF 25V M
C658	QETN1EM-227Z	E CAPACITOR	220uF 25V M
C659	QETN1HM-475Z	E CAPACITOR	4.7uF 50V M
C663	NCB31HK-102X	C CAPACITOR	1000pF 50V K
C664	QETN1CM-107Z	E CAPACITOR	100uF 16V M
C665	NCB31HK-103X	C CAPACITOR	0.01uF 50V K
C705	QETN1CM-477Z	E CAPACITOR	470uF 16V M
C706	NCB31HK-104X	C CAPACITOR	0.1uF 50V K
C707	NCB31HK-103X	C CAPACITOR	0.01uF 50V K
C708	QETN1AM-108Z	E CAPACITOR	1000uF 10V M
C709	NCB31HK-103X	C CAPACITOR	0.01uF 50V K
C710	QETN1CM-107Z	E CAPACITOR	100uF 16V M
C711	NCB31HK-103X	C CAPACITOR	0.01uF 50V K
C712	NCB31HK-103X	C CAPACITOR	0.01uF 50V K
C713	NCB31HK-103X	C CAPACITOR	0.01uF 50V K
C716	NDC31HJ-181X	C CAPACITOR	180pF 50V J
C717	NDC31HJ-181X	C CAPACITOR	180pF 50V J
C718	NCB31HK-103X	C CAPACITOR	0.01uF 50V K
C719	QETN1HM-105Z	E CAPACITOR	1uF 50V M
C720	NCB31HK-103X	C CAPACITOR	0.01uF 50V K
C721	NCB31EK-333X	C CAPACITOR	0.033uF 25V K
C722	NDC31HJ-101X	C CAPACITOR	100pF 50V J
C724	NDC31HJ-560X	C CAPACITOR	56pF 50V J
C728	NDC31HJ-181X	C CAPACITOR	180pF 50V J
C729	NDC31HJ-181X	C CAPACITOR	180pF 50V J
C730	NCB31HK-103X	C CAPACITOR	0.01uF 50V K
C744	NCB31HK-103X	C CAPACITOR	0.01uF 50V K
C805	QETN1CM-227Z	E CAPACITOR	220uF 16V M
C806	QETN1CM-477Z	E CAPACITOR	470uF 16V M
C811	QETN1HM-106Z	E CAPACITOR	10uF 50V M
C841	NCB31HK-152X	C CAPACITOR	1500pF 50V K
⚠C901	QFZ9073-224	MM CAPACITOR	0.22uF AC250V M
⚠C904	QCZ9054-102	C CAPACITOR	1000pF AC250V Z
⚠C905	QCZ9054-102	C CAPACITOR	1000pF AC250V Z
⚠C907	QCZ9054-102	C CAPACITOR	1000pF AC250V Z
C909	QEZ0476-127	E CAPACITOR	120uF
⚠C910	QFZ9072-104	MM CAPACITOR	0.1uF AC250V K
C922	QFLC1HJ-104Z	M CAPACITOR	0.1uF 50V J
C924	QETN1HM-475Z	E CAPACITOR	4.7uF 50V M
C925	QETN1HM-336Z	E CAPACITOR	33uF 50V M
C926	QFLC1HJ-332Z	M CAPACITOR	3300pF 50V J
C927	NCB31HK-104X	C CAPACITOR	0.1uF 50V K
C929	QFKA2JK-103	MM CAPACITOR	0.01uF 630V K
C931	QCZ0364-681	C CAPACITOR	680pF 2kV K
C932	NDC31HJ-221X	C CAPACITOR	220pF 50V J
C941	QCZ0364-561	C CAPACITOR	560pF 2kV K
C942	QEZ0203-107	E CAPACITOR	100uF 160V M
C944	QCB32HK-222Z	C CAPACITOR	2200pF 500V K
C945	QEHR1EM-108Z	E CAPACITOR	1000uF 25V M
C946	QETN1EM-108Z	E CAPACITOR	1000uF 25V M
C947	QCB32HK-222Z	C CAPACITOR	2200pF 500V K
C948	QETN1EM-108Z	E CAPACITOR	1000uF 25V M
C949	NDC31HJ-471X	C CAPACITOR	470pF 50V J
C976	QETN1EM-227Z	E CAPACITOR	220uF 25V M
C977	QETN1CM-227Z	E CAPACITOR	220uF 16V M
C978	QETN1EM-227Z	E CAPACITOR	220uF 25V M
C979	QETN1AM-227Z	E CAPACITOR	220uF 10V M
⚠C991	QCZ9071-102	C CAPACITOR	1000pF AC400V M
⚠C992	QCZ9071-102	C CAPACITOR	1000pF AC400V M
⚠C993	QCZ9071-102	C CAPACITOR	1000pF AC400V M
R002	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J
R003	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J
R004	NRSA63J-563X	MG RESISTOR	56kΩ 1/16W J
R102	NRSA63J-750X	MG RESISTOR	75Ω 1/16W J
R103	NRSA63J-100X	MG RESISTOR	10Ω 1/16W J
R109	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J
R110	NRSA63J-272X	MG RESISTOR	2.7kΩ 1/16W J
R111	NRSA63J-181X	MG RESISTOR	180Ω 1/16W J
R112	NRSA63J-100X	MG RESISTOR	10Ω 1/16W J
R113	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J
R120	NRSA63J-391X	MG RESISTOR	390Ω 1/16W J
R121	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J
R159	NRSA63J-184X	MG RESISTOR	180kΩ 1/16W J
R161	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J
R162	NRSA63J-122X	MG RESISTOR	1.2kΩ 1/16W J
R163	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J
R164	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J
R165	NRSA63J-220X	MG RESISTOR	22Ω 1/16W J
R166	NRSA63J-821X	MG RESISTOR	820Ω 1/16W J
R301	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J
R302	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R303	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J
R304	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J
R305	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J
R306	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J
R307	NRSA63J-122X	MG RESISTOR	1.2kΩ 1/16W J
R308	NRSA63J-182X	MG RESISTOR	1.8kΩ 1/16W J
R312	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J
R313	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J
R314	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J
R321	NRSA63J-152X	MG RESISTOR	1.5kΩ 1/16W J
R322	NRSA63J-272X	MG RESISTOR	2.7kΩ 1/16W J
R323	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R324	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J
R326	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J
R327	NRSA63J-475X	MG RESISTOR	4.7MΩ 1/16W J
R341	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J
R347	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J
R349	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R351	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J
R352	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J
R353	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J
R354	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J
R355	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J
R356	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J
R357	NRSA63J-470X	MG RESISTOR	47Ω 1/16W J
R358	NRSA63J-470X	MG RESISTOR	47Ω 1/16W J
R359	NRSA63J-470X	MG RESISTOR	47Ω 1/16W J
R360	QRZ0107-152Z	C RESISTOR	1.5kΩ 1/2W K
R361	QRZ0107-152Z	C RESISTOR	1.5kΩ 1/2W K
R362	QRZ0107-152Z	C RESISTOR	1.5kΩ 1/2W K
R363	QRL029J-123	OMF RESISTOR	12kΩ 2W J
R364	QRL029J-123	OMF RESISTOR	12kΩ 2W J
R365	QRL029J-123	OMF RESISTOR	12kΩ 2W J
R366	NRSA63J-182X	MG RESISTOR	1.8kΩ 1/16W J
R367	NRSA63J-182X	MG RESISTOR	1.8kΩ 1/16W J
R368	NRSA63J-182X	MG RESISTOR	1.8kΩ 1/16W J
R374	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J
R401	NRSA02J-103X	MG RESISTOR	10kΩ 1/10W J
R421	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R423	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J
R424	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J
R425	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J
R426	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J
R429	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R430	NRSA63J-823X	MG RESISTOR	82kΩ 1/16W J
R431	NRSA02J-103X	MG RESISTOR	10kΩ 1/10W J
R432	QRE121J-3R9Y	C RESISTOR	3.9Ω 1/2W J
R433	QRE121J-2R7Y	C RESISTOR	2.7Ω 1/2W J
R436	NRSA63J-823X	MG RESISTOR	82kΩ 1/16W J
R440	QRE121J-471Y	C RESISTOR	470Ω 1/2W J
R441	NRSA63J-822X	MG RESISTOR	8.2kΩ 1/16W J
R442	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R443	QRE121J-1R0Y	C RESISTOR	1Ω 1/2W J
R453	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J
R502	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J
R503	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J
R521	QRE121J-560Y	C RESISTOR	56Ω 1/2W J
R525	QRL029J-330	OMF RESISTOR	33Ω 2W J
R526	QRE121J-271Y	C RESISTOR	270Ω 1/2W J
R529	QRL039J-681	OMF RESISTOR	680Ω 3W J
R531	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J
R532	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J
⚠R551	QRX029J-R47	MF RESISTOR	0.47Ω 2W J
R552	QRJ146J-2R2X	UNF C RESISTOR	2.2Ω 1/4W J
R554	QRE121J-152Y	C RESISTOR	1.5kΩ 1/2W J
R571	QRE121J-222Y	C RESISTOR	2.2kΩ 1/2W J
R573	QRT029J-1R5	MF RESISTOR	1.5Ω 2W J
R574	QRT029J-1R5	MF RESISTOR	1.5Ω 2W J
R576	QRE121J-223Y	C RESISTOR	22kΩ 1/2W J
R577	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J
R578	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R581	QRE121J-182Y	C RESISTOR	1.8kΩ 1/2W J
R582	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J
R583	NRSA63J-393X	MG RESISTOR	39kΩ 1/16W J
R651	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R652	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J
R653	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J
R654	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J
R655	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J
R656	NRSA63J-822X	MG RESISTOR	8.2kΩ 1/16W J
R657	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J
R658	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J
R659	QRE121J-4R7Y	C RESISTOR	4.7Ω 1/2W J
R660	NRSA63J-153X	MG RESISTOR	15kΩ 1/16W J
R661	QRE121J-271Y	C RESISTOR	270Ω 1/2W J
R662	QRE121J-271Y	C RESISTOR	270Ω 1/2W J
R664	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J

⚠Ref No.	Part No.	Part Name	Description Local
R665	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R666	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J
R667	QRE121J-101Y	C RESISTOR	100Ω 1/2W J
R668	QRT029J-5R6	MF RESISTOR	5.6Ω 2W J
R706	NRSA63J-561X	MG RESISTOR	560Ω 1/16W J
R707	NRSA63J-561X	MG RESISTOR	560Ω 1/16W J
R708	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J
R709	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R710	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R711	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R712	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R713	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R714	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R715	NRSA63J-681X	MG RESISTOR	680Ω 1/16W J
R716	NRSA63J-681X	MG RESISTOR	680Ω 1/16W J
R718	NRSA63J-561X	MG RESISTOR	560Ω 1/16W J
R719	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J
R720	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R721	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R723	QRL039J-270	OMF RESISTOR	27Ω 3W J
R725	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J
R726	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R727	NRSA63J-153X	MG RESISTOR	15kΩ 1/16W J
R728	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J
R729	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J
R730	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R731	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R736	NRSA63J-823X	MG RESISTOR	82kΩ 1/16W J
R737	NRSA63J-104X	MG RESISTOR	100kΩ 1/16W J
R738	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R739	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R740	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J
R741	NRSA63J-561X	MG RESISTOR	560Ω 1/16W J
R742	NRSA63J-563X	MG RESISTOR	56kΩ 1/16W J
R746	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R748	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J
R749	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R771	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J
R772	NRSA63J-821X	MG RESISTOR	820Ω 1/16W J
R773	NRSA63J-122X	MG RESISTOR	1.2kΩ 1/16W J
R796	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R797	NRSA63J-153X	MG RESISTOR	15kΩ 1/16W J
R802	NRSA63J-750X	MG RESISTOR	75Ω 1/16W J
R806	QRE121J-271Y	C RESISTOR	270Ω 1/2W J
R807	NRSA63J-680X	MG RESISTOR	68Ω 1/16W J
R810	QRG01GJ-560	OMF RESISTOR	56Ω 1W J
R811	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J
R815	QRE121J-181Y	C RESISTOR	180Ω 1/2W J
R816	NRSA63J-681X	MG RESISTOR	680Ω 1/16W J
R817	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R901	QRF104K-3R9	UNF WW RESISTOR	3.9Ω 10W K
R903	QRL029J-104	OMF RESISTOR	100kΩ 2W J
R906	QRL029J-104	OMF RESISTOR	100kΩ 2W J
R921	QRE121J-1R8Y	C RESISTOR	1.8Ω 1/2W J
R922	QRE121J-221Y	C RESISTOR	220Ω 1/2W J
R923	QRZ0237-R18	UNF WW RESISTOR	0.18Ω 3W J
R924	NRSA63J-154X	MG RESISTOR	150kΩ 1/16W J
R925	NRSA63J-105X	MG RESISTOR	1MΩ 1/16W J
R928	QRL039J-683	OMF RESISTOR	68kΩ 3W J
R933	QRE121J-4R7Y	C RESISTOR	4.7Ω 1/2W J
R934	NRSA63J-683X	MG RESISTOR	68kΩ 1/16W J
R935	QRE121J-392Y	C RESISTOR	3.9kΩ 1/2W J
R974	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J
R976	QRL029J-120	OMF RESISTOR	12Ω 2W J
R977	QRE121J-122Y	C RESISTOR	1.2kΩ 1/2W J
R978	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J
R979	QRL039J-470	OMF RESISTOR	47Ω 3W J
R980	QRL029J-153	OMF RESISTOR	15kΩ 2W J
⚠R991	QRZ9046-825Z	C RESISTOR	8.2MΩ 1/2W K
L001	QQL244K-8R2Z	PEAKING COIL	8.2uH K
L101	QQL244J-2R2Z	PEAKING COIL	2.2uH J
L103	QQL244K-8R2Z	PEAKING COIL	8.2uH K
L551	QQLZ026-320	COIL	32uH ±7%
L701	QQL244J-5R6Z	COIL	5.6uH J
L941	QQL26AK-820Z	CHOKE COIL	82uH K
L942	QQL244J-4R7Z	PEAKING COIL	4.7uH J
L943	QQL244J-4R7Z	PEAKING COIL	4.7uH J
T501	QQR1244-001	DRIVE TRANSF	
⚠T921	QQS0213-001	SW TRANSF	
CF161	QAX0694-001Z	C FILTER	5.742MHz
CF162	QAX0694-001Z	C FILTER	5.742MHz
⚠CP981	ICP-N50-T	IC PROTECTOR	2.0A
⚠CP982	ICP-N75-T	IC PROTECTOR	2.7A
⚠F901	QMF51E2-3R15-S	FUSE	3.15A AC250V
J002	QNN0384-001	PIN JACK	VIDEO,AUDIO IN/OUT (REAR)
J003	QNN0281-003	PIN JACK	VIDEO IN(FRONT)
J004	QNN0281-002	PIN JACK	AUDIO IN(FRONT)
J005	QNS0197-001	3.5 JACK	HEADPHONE
K351	QQR0621-002Z	FERRITE BEADS	
K421	QQR1113-001Z	FERRITE BEADS	
K901	QQR1113-001Z	FERRITE BEADS	
K902	QQR1113-001Z	FERRITE BEADS	
K941	QQR1113-001Z	FERRITE BEADS	
K942	QQR1113-001Z	FERRITE BEADS	
K943	QQR1113-001Z	FERRITE BEADS	
⚠LF901	QQR0527-002	LINE FILTER	
S701	QSW0619-003Z	PUSH SWITCH	CH+
S702	QSW0619-003Z	PUSH SWITCH	CH-
S703	QSW0619-003Z	PUSH SWITCH	VOL+
S704	QSW0619-003Z	PUSH SWITCH	VOL-
S705	QSW0619-003Z	PUSH SWITCH	MENU
⚠S901	QSW0750-001	PUSH SWITCH	POWER
SF102	QAX0666-002	SAW FILTER	
SF122	QAX0325-001	SAW FILTER	
⚠SK351	QNZ0536-002	CRT SOCKET	
⚠TH901	QAD0121-9R0	P THERMISTOR	9Ω
TU001	QAU0466-001	TUNER	
⚠VA901	QAF0072-621	VARISTOR	620V
X301	QAX0705-001Z	CRYSTAL	4.433619MHz
X302	QAX0860-001Z	CRYSTAL	3.579545MHz
X701	QAX0884-001	C RESONATOR	12.000MHz
	LC30114-001C-H	LED HOLDER	

REMOTE CONTROL UNIT PARTS LIST (RM-C1121-1H)

⚠	Ref No.	Part No.	Part Name	Description	Local
		R56-1400	BATTERY COVER		

PACKING



PACKING PARTS LIST

⚠	Ref.No.	Part No.	Part Name	Description	Local
	1	GG10281-012A-H	PACKING CASE		
	2	GG10296-001A-H	CUSHION ASS'Y	4pcs in 1set	
	3	GG30097-003A-H	POLY BAG		
	4	GG30096-001A-H	POLY BAG		
	5	----------	BATTERY	AA/R6 1.5V(x2)	
⚠	6	GGT0111-001A-H	INST BOOK	English,Thai	
	7	ATEAB001-00A	MATCHING BOX		
	8	RM-C1121-1H	REMOCON UNIT		
	9	GG30147-001B-H	CORNER LABEL	2pcs in 1set	